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LONDON: SATURDAY, JULY 2nd, 1932

An Address
ON
KOCH'S DISCOVERY OF THE TUBERCLE BACILLUS
Some of its Implications and Results*

BY

SIR ROBERT PHILIP, M.D., LL.D.

PROFESSOR OF TUBERCULOSIS, UNIVERSITY OF EDINBURGH; PHYSICIAN CONSULTANT, EDINBURGH ROYAL INFIRMARY

Robert Koch was born on December 11th, 1843, at Clausthal among the Harz Mountains, the third child of a family of thirteen. His father was a mining official. The lad passed from the local gymnasium to the neighbouring university at Göttingen, where, after working at mathematics and physics, he turned to medicine. As an undergraduate he assisted Henle in the pathological museum. He took his M.D. in January, 1866. After gaining experience in hospital at Hamburg and in general practice near Hanover and in Posen, he did Army medical service during the Franco-Prussian war. Thereafter he went to Wolstein as district physician in Bomst, Polish Prussia.

Earliest Investigations

In this little provincial town of Bomst, without the facilities of a university laboratory, Koch began observations on his own account. In his modest home a portion of the consulting room was curtained off so that, in the intervals between seeing patients, he might do microscopical work and, with some help from the local apothecary, seek answers to the questions which were stirring in his mind. He quickly realized the insufficiency of the existing microscope, and made suggestions to Professor Abbé and the firm of Zeiss with a view to its improvement. He investigated micro-organisms by means of staining methods and cultures to such purpose that, in April, 1876, he was able to write to the botanist, Ferdinand Cohn of Breslau, that in his study of the anthrax bacillus he had found the spores of the bacillus which, from analogy with other bacilli, Cohn had predicated. At the Botanical Institute, Breslau, to an audience which, in addition to Cohn, included three distinguished men—namely, Cohnheim, Weigert, and Traube, Koch demonstrated the development of spores within the *Bacillus anthracis*, their liberation from the bacillus, and the sprouting of the bacillus from the spore, the occurrence of spore formation in anthracic blood, and the production of anthrax in mice and rabbits by inoculation of the bacilli and spores. In 1876 he published his first classic paper on the aetiology of anthrax, based on a study of the life-history of the bacillus. Following this, in 1878, came a like important paper on the aetiology of wound infections.

I mention these publications especially because they embody the results of two of Koch's earliest investigations, during the course of which it was necessary for him, not only to envisage his goal, but to cut every step for himself in a strange and almost pathless country. At every turn means had to be discovered to get round all sorts of difficulties and to follow the delicate thread which scientific intuition assured him would guide him aright. These early researches yielded results of first-class importance, and at the same time led to the discovery and elaboration of methods which gradually gave shape to the science of bacteriology, of which, prior to Koch's time, the foundations had been laid by Pasteur, Lister, and others. On the present occasion it would be out of place to say more regarding the vast aetiological harvest which bacteriology has reaped, and the reconception of the problems of disease which has resulted therefrom. Accordingly, *revenons à nos moutons!*

The Infective Theory

It was characteristic of Koch's mental make-up that his thought moved instinctively towards important issues—problems with many facets and large implications. This impelled him to the study of infection generally and, among infective conditions, particularly those of wide or universal distribution, such as wound infection, cholera, and malaria. That breadth of outlook led him to the investigation of tuberculosis. His big sweep of the subject is strikingly attested in the second and third paragraphs with which his classic monograph of March 24th, 1882, opens:

"Wenn die Zahl der Opfer, welche eine Krankheit fordert, als Mass-stab für ihre Bedeutung zu gelten hat, dann müssen alle Krankheiten, namentlich aber die gefürchtetsten Infektionskrankheiten, Pest, Cholera, etc., weit hinter der Tuberkulose zurückstehen. Die Statistik lehrt, dass 1/7 aller Menschen an Tuberkulose stirbt und dass, wenn nur die mittleren produktiven Altersklassen in Betracht kommen, die Tuberkulose ein Drittel derselben und oft mehr dahinrafft. Die öffentliche Gesundheitspflege hat also Grund genug, ihre Aufmerksamkeit einer so mörderischen Krankheit zu widmen, ganz abgesehen davon, dass noch andere Verhältnisse, von denen nur die Beziehungen der Tuberkulose zur Perlsucht erwähnt werden sollen, das Interesse der Gesundheitspflege in Anspruch nehmen.

Da es nun zu den Aufgaben des Gesundheitsamtes gehört, die Infektionskrankheiten vom Standpunkte der Gesundheitspflege aus, also in erster Linie in bezug auf ihre Ätiologie, zum gegenstand von Ermittelungsarbeiten zu machen, so erschien es als eine dringende Pflicht, vor allem über die Tuberkulose eingehends Untersuchungen anzustellen."

Tuberculosis had been observed as a more or less definite disease from very early times. The evidence of its occurrence in ancient Egypt is incontrovertible, and throughout succeeding ages it was recognized in every civilized land. Yet its nosological relationships were misinterpreted for the most part. Here and there—notably among the Latin peoples—the conception of its infectivity emerged and resulted in the enactment of special laws and regulations in Italy and Spain. How little this Latin conception

* Delivered to the Osler Club, March 24th, 1932.

permeated opinion in other countries may be gathered from the following annotation from the *Lancet* of March 9th, 1867, under the heading of "Death fees in foreign hotels":

"It seems that the Italians have most conveniently imbibed the notion that consumption is contagious and, should unhappily a phthisical patient die in an hotel, the bill but too often contains the singular item—'Indemnité pour réfaction des meubles et de la chambre occupée par le défunt, £100 sterling.' . . . The ground," continues the critic, "upon which such a charge, the most exhorbitant of any that has been manufactured for many a long day, rests is utterly untenable, and, of course, the demand should at once be repudiated. At the same time a little care is needed to prevent surprise, for in those cases in which a house or an apartment is taken by agreement for any length of time, the legal document which binds the contract may contain a clause to the effect that the tenant is expected to pay the extortionate sum which we have named, in case of death occurring from consumption, and we notice the matter that the profession may put clients on their guard."

While the infectiousness of tuberculosis was suspected by many, the first instalment of actual proof was presented in the observations of Klencke (1843), who induced tuberculosis in rabbits by inoculation (intravenous) with tuberculous material from human source. These limited observations were followed by the authoritative communication of Villemin (1865) to the Académie de Médecine of Paris, in which he tabled the results of prolonged research, and demonstrated the infective character of tuberculous material obtained from man and cattle. Complete as the demonstration might seem to be, its validity was not universally admitted. In the discussion which supervened, Villemin's thesis received effective support from Cohnheim and Salomonsen, who, by a series of observations, using the anterior chamber of the rabbit's eye as the site of inoculation, proved conclusively that tuberculous material from different sources owed their infectiveness to one and the same specific contagion. It is at this point that Robert Koch enters the scene.

Basing his research on the infectivity of tuberculosis, as demonstrated by Villemin, Cohnheim, Salomonsen, Baumgarten, and others, Koch's genius enabled him to track and pinion the tubercle bacillus with superb nicety. In claiming the acceptance of the bacillus as the *causa peccans*, he defined—in keeping with the teaching of his master, Henle—the postulates essential to such a claim, and, by a record of brilliant experiment, proved beyond cavil that these postulates were satisfied by the bacillus. His comprehensive vision of the problem of tuberculosis, and his elaboration of one after another method at successive stages in the course of their solution, have crowned him one of the creators of the science of medicine.

Professional Apathy Towards It

The present generation of doctors can hardly imagine the blurred and faulty aetiological conceptions which, fifty years ago, were in vogue regarding tuberculosis. It so chanced that the announcement of Koch's discovery (1882) coincided with my graduation in medicine. As with other students up to that date, my training had been based on the pre-bacillary conception of Virchow, Niemeyer, Williams, and other authorities of those days. The suddenness of the switch to the bacillary view, and its import, had, in my own experience, profound consequences. Work in a different field was interrupted and interest was vividly aroused. I am happy to have this opportunity of rendering homage to the man of genius who impelled me to the study of the portentous questions opened up by his discovery—questions the fascination of which has continued uninterruptedly throughout the past fifty years.

Nor is it easy for the student of tuberculosis to-day to visualize the attitude of apathy that prevailed at the date of Koch's discovery. One illustration will suffice. On returning to Edinburgh in 1883 and indicating my purpose to devote attention especially to the subject of tuberculosis, the remark of the honoured professor of medicine was: "Don't think of such a thing. Phthisis is worn to a thin thread. The subject is exhausted." What a contrast to the vast and ever-growing mass of record and literature which has emerged in the interval! The pages of the special journals concerned with tuberculosis (British, American, French, German, *et hoc genus omne*) illustrate how things have changed, and how formidable is the attempt to keep abreast of the infinitely varying lines of investigation, each one of which is referable to the fundamental fact reported to the Physiologische Gesellschaft zu Berlin on March 24th, 1882.

It was at 7 o'clock on a cheerless, damp evening that the Society assembled in the reading room of the recently opened Physiological Institute under the presidency of Professor du Bois-Reymond, the director of the Institute. The company, some thirty-six in all, included, in addition to the chairman, Helmholtz, Frerichs and his pupil Ehrlich, and Loeffler. It was a small group of trained scientists that listened to Koch's maiden speech in Berlin. The theme and the occasion were alike momentous. Eye-witnesses have told of some nervousness in Koch's opening words, and the precise and impressive character of every phrase. Each statement was supported by abundant, convincing evidence—macroscopic and microscopic. His closing sentence was followed by a moment or two of tense silence, to be succeeded presently by a fervid outburst of applause and congratulation. If the company was notable—the Physiological Society of Berlin—the occasion was little less remarkable by reason of those who were absent, notably Virchow, and likewise the then champions in medicine and surgery. For most of them the *volte-face* from the deeply rooted principles of cellular pathology and post-mortem findings was too abrupt. Their range of accommodation was too limited. "Simple nonsense" some declared: "Utter humbug"!

Koch's Evidence Presented

The classic monograph, "Die Ätiologie der Tuberkulose," occupies less than eighteen pages in Koch's *Gesammelte Werke*. It constitutes an amazing record. The simplicity and directness of statement are impressive. There is no beating about the bush. The essential elements of the problem are marshalled with unsurpassable clarity and completeness.

Almost before one is aware there commences the succession of infrangible links in the chain of evidence forged individually and collectively by the master mind. The paper remains for all time a model of scientific statement. The tubercle bacillus was identified in every variety of tuberculous product, human and animal, and was separated from every other organism. It was reproduced in pure culture outside the body. The pure culture, when transferred to animals, produced tuberculosis, and from the tuberculosis so produced the bacillus was recoverable. One of the greatest advances in medicine recorded in one of the most concise documents of medical literature! Within the compass of these eighteen pages is unfolded the solution of the enigma of the ages.

"Alle diese Tatsachen zusammengenommen berechtigen zu dem Ausspruch, dass die in den tuberkulösen Substanzen vorkommenden Bazillen nicht nur Begleiter des tuberkulösen Prozesses, sondern die Ursache desselben sind, und dass wir in den Bazillen das eigentliche Tuberkelvirus vor uns haben.

Damit ist auch die Möglichkeit gegeben, die Grenzen der unter Tuberkulose zu verstehenden Krankheit zu ziehen, was bisher nicht mit Sicherheit geschehen konnte. Es fehlte an einem bestimmten Kriterium für die Tuberkulose, und der eine rechnete dazu Miliartuberkulose, Phthisis, Skrofulose, Perlsucht, etc., ein anderer hielt vielleicht mit ebenso viel

Recht alle diese Krankheitsprozesse für different. In Zukunft wird es nicht schwierig sein zu entscheiden, was tuberkulös und was nicht tuberkulös ist. Nicht der eigentümliche Bau des Tuberkels, nicht seine Gëfasslosigkeit, nicht das Vorhandensein von Riesenzellen wird den Ausschlag geben, sondern der Nachweis der Tuberkelbazillen."

To the original communications (1882–4) very little of essential character has had to be added. They have remained the foundation on which has rested all subsequent research. The implications of the record were very wide. Koch's television was astonishing. The trend of subsequent investigation was anticipated. The original monograph of 1882 contains in embryo the ampler knowledge which we enjoy to-day through the countless observations of half a century.

It may be convenient at this stage to link with the original monograph certain points from Koch's subsequent researches. Let me cite first the illuminating observations recorded by him in 1891 (*Deut. med. Woch.*, 1891, 17, 101) and usually referred to as the "phenomenon of Koch." These went to show that when a guinea-pig, already infected four to six weeks previously, is subjected to fresh inoculation, the course of events is entirely different from that following the first inoculation. No nodule forms at the point of reinoculation, but during the following day or two a small area of skin becomes necrotic and sloughs, leaving superficial ulceration which heals quickly and completely. While foci already existing within the animal may be activated, there is no fresh spread of infection from the point of inoculation. This observation, now abundantly confirmed, has explained much that is otherwise difficult regarding events in the life-history of the tuberculous patient. When once tuberculized, the affected individual seems to be protected from a fresh entry of bacilli into his system. To that extent the initial infection exerts a defensive influence. The effect of subsequent absorption of bacilli following repeated re-exposure to infection is not to start a fresh chain similar to that following the first infection, but rather to activate existing foci and thereby lead to an aggravation of symptoms either by extension of a localized lesion or by the carriage of bacilli from a localized lesion to other parts.

It was observations along these and cognate lines which led Koch to the elaboration of tuberculin. Regarding the significance of tuberculin in different fields I shall have more to say. In the meantime it is important to note that effects similar to those just described as following reinoculation with living bacilli followed also when, in place of living organisms, bacilli sterilized by boiling or by chemical agents were introduced. This led to the view that within the body of the bacillus there exist elements related to the life-history of the bacillus which have active properties capable of affecting the animal which harbours the bacilli. These elements were separable from the bodies of the bacilli and from the culture medium in which the bacilli were growing. Koch's original tuberculin—and tuberculin in its various forms—consists of an extract obtained from the bodies of the bacilli or from the culture medium, or from both. Tuberculin, therefore, has specific relationships with the tubercle bacillus and, when brought into the presence of the tubercle bacillus in animal or man, reveals this relationship by certain recognized reactions. These reactions led naturally to the application of tuberculin in diagnosis and treatment.

Practical Applications of his Work

While the science of bacteriology was thus advanced by the investigations associated with the discovery of the bacillus, Koch's vision reached still further. With superlative finesse he lifts the curtain and reveals the far-stretching vista and the fresh orientation which the discovery gave to preventive medicine and to the practice of medicine and of surgery:

"Wenn sich die Überzeugung, dass die Tuberkulose eine exquisite Infektionskrankheit ist, unter den Ärzten Bahn gebrochen haben wird, dann werden die Fragen nach der zweckmässigsten Bekämpfung der Tuberkulose gewiss einer Diskussion unterzogen werden und sich von selbst entwickeln."

The infectivity of tuberculosis having been established beyond dispute, it became evident that the problem of its prevention and treatment in the individual, and throughout the population, must be handled on the broad principles which were applicable to other infections. It was equally clear that the matter presented difficulties inherent to the disease itself.

The course of tuberculosis differs widely from that of other infections. Tuberculosis is peculiar in respect of the extent and mode of its dissemination from man to man and from animal to man, and peculiar by reason of its prolonged course and the conditions of environment on which its dissemination and its varying manifestations depend. It was obvious that methods to combat tuberculosis could not be modelled entirely on those which had been found serviceable for other infections. Every move centred round the recognition of the bacillus as *causa peccans*. The detection of the bacillus by one or other means afforded for the first time infallible evidence as to the presence of tuberculosis. The physician and the surgeon had no longer to grope in the dark. A definite purpose was given to measures for prevention and treatment. Time-honoured beliefs were subjected to revision. The doctrine of the heredity of tuberculosis—deeply ingrained in the popular imagination, and little less in that of the doctor—was exploded.

With a still wider sweep, the discovery inaugurated the scientific study of the natural history of tuberculous infection. Facts became available both from the experimental animal and from the human subject. Those afforded by the former served as key to the interpretation of the latter. The complex human problem was clarified by the facts of experimental pathology. The guinea-pig, rabbit, calf, and monkey have been good friends to the student of tuberculosis.

The widespread distribution of tuberculosis throughout the community, its appalling mortality, its apparent emergence at all ages, the protean character of its manifestations, and the interrelationship of human and bovine infection, called for thoughtful study. Of hardly less importance was the economic stress and hardship produced by the long continuance of ill-health and the crippling effect on remunerative labour.

Dispensary and Sanatorium

It became speedily evident that there was an urgent need for the collection of facts concerning the ubiquitous disease. The recognition of this led to the establishment of the first Tuberculosis Dispensary in 1887. These intelligence centres are now distributed throughout the world. It is to the properly organized dispensary that we should look for further contributions to our knowledge regarding the natural history of tuberculosis. It is difficult to overestimate the value of *continuity of observation and record regarding tuberculosis throughout the lifetime of the individual*, and it is to be regretted that the conduct of these intelligence centres is often relegated to inexperienced officers. Dispensary staffs should not limit their energy to the care of individual patients who present themselves for examination, but should be a mobile force, ready to hunt down the enemy in a systematic search for *all* cases in their area, and qualified to interpret the associated circumstances. The significance of such observations hastened the introduction of compulsory notification. Another primary need for dealing

with the disease was the establishment of residential institutions for the segregation of the more infective cases. In illustration of the need, records of the Victoria Tuberculosis Dispensary from 1887 to 1907 showed (International Congress, Washington, 1908) that in 61.4 per cent. of cases under observation there had existed in the home surroundings all the possibilities of infection—that is, the patient had been for a long period in the closest proximity to at least one case of advanced tuberculosis, while in another 11.7 per cent. direct infection was probable. Furthermore, in 65.9 per cent. the tuberculous patient occupied the same bed with one or several persons, and in 11 per cent. more, he or she occupied the same room.

Such facts impressed Koch with the urgent necessity for the segregation of the more infective cases in a special hospital, and for the careful control of the domiciliary conditions—especially the sleeping arrangements—of the large number of patients, who for one reason or another could not be placed in hospital. In one of his latest papers ("Epidemiologie der Tuberkulose," vortrag gehalten in der Akademie der Wissenschaften zu Berlin am 7 April, 1910) Koch expressed himself as follows:

"Diese Betrachtungen zeigen, dass die Abnahme der Schwindsucht in neuerer Zeit durch verschiedene Faktoren bedingt wird, von denen die beiden wichtigsten die Krankenfürsorge mit Isolierung der Phthisiker in Krankenanstalten und die Verbesserung der Wohnungsverhältnisse, insbesondere des Schlafraumes sind.

Es geht daraus hervor, welche ungeheuren Hindernisse noch überwunden werden müssen, ehe es gelingen wird, die Schwindsuchtsmortalität immer weiter herabzusetzen."

With regard to the sanatorium for the curative treatment of tuberculosis, Koch's attitude was that of scientific reserve. Having regard to the wide distribution of the infection, he realized that the effective part played by the sanatorium was limited. The value of the sanatorium was inevitably dependent on the care with which really curable cases were selected, and on a sufficiency of time being allowed for completion of the cure. Those essential conditions were—as in many cases they still are—notoriously neglected. On the other hand, Koch was fully appreciative of the significance of the physiological principles underlying sanatorium methods and their universal applicability in the treatment and prevention of tuberculosis.

He recognized further that, if it was the part of medical science to point the way, success in the campaign against tuberculosis would in the long run depend on the diffusion of knowledge throughout the people. They must be armed for self-defence. How thoroughly Koch envisaged the effect of enlisting public opinion in support of the campaign is evident from the following quotation:

"Dazu rechne ich in erster Linie alle die Bestrebungen, welche darauf gerichtet sind, durch populäre Schriften, Vorträge, Ausstellungen und sonstige derartige Mittel Belehrung über die Tuberkulosegefahr in das Volk zu tragen und das Interesse der breiten Volksschichten für die Tuberkulosebekämpfung wach zu halten." (Nobel-Vorlesung, 12 Dezember, 1905.)

TUBERCULIN AND ITS USES

This brief tribute to the memory of the master must not close without further reference to the wide sweep of his untiring researches which culminated in the elaboration of tuberculin. If the discovery of the tubercle bacillus afforded the central illumination point, the subsequent production of tuberculin has likewise thrown a flood of light on the entire field of tuberculosis. Its application in widely varied fashion has opened fresh paths of knowledge regarding the extent and significance of tuberculous infection. Epidemiological investigations rendered possible by means of tuberculin have disclosed a wide vista, and gradually clarified one issue after another of a very complex problem.

In the practical sphere, the evidence afforded by tuberculin in relation to diagnosis in man and cattle—in the absence of direct proof of the presence of the bacillus—has been of priceless value. Thus, in the bovine sphere, it has made possible the establishment of tubercle-free herds and the production of tubercle-free milk. It would be difficult to overestimate the help afforded by its regular use in the service of the Tuberculosis Dispensary. It is my firm conviction, having regard to the frequency of tuberculous infection in childhood, and the possible consequences of such infection, that the use of tuberculin as a diagnostic agent should become routine practice from early infancy onwards. The fact of infection, and the date of its first detection, are of first-class importance in the life-history of the child. So long as reaction to the test continues negative, there is no need for further action. If, following positive determination, the health of the child remains good, we know that the child's resistance is equal to the occasion. There is no need for special care. The occurrence of the positive reaction, however, may prove the key to the interpretation of numerous doubtful events in the life-history of the child—for example, obscure feverish attacks, unexplained malnutrition, ill-defined lack of energy, disturbed action of the heart, which may interfere with the normal course of development and education.

"Such determination is the first essential step towards effective detuberculization of the individual and, ultimately, of the community. The procedure is harmless and costs little. Yet its general adoption would result in the anticipation and limitation of countless consequences in the shape of invalidism and crippling. It is the lack of such scientific anticipation which has created, and meantime maintains, the need for sanatoriums and hospitals all over the country. As I put it in 1912: It is to the nursery and schoolroom that observation and effort should be directed if measures for the eradication of tuberculosis are to be fundamently sound and practically effective." (*British Medical Journal*, January 10th, 1931.)

Turning to the therapeutic side my words will be few. The terms used by Koch in his communication regarding tuberculin as a remedial agent (*Deut. med. Woch.*, December, 1890) were simple, clear, and temperate. He was not responsible for the excited enthusiasm, medical and lay, which knew no bounds, nor for the mad rush of sick and dying to Berlin: nor for the inevitable disastrous reaction which, like the initial excitement, was exaggerated and bore little relation to the facts. I can never forget Koch's personal kindness in the midst of the turmoil. When I visited Germany in December, 1890, Berlin presented its coldest wintry aspect; but Koch's reception was most friendly when, armed with an introduction from the revered Rudolf Virchow (who was already definitely critical), I obtained from him a small flask of the brown-coloured fluid. Accepting his personal testimony and the evidence submitted by reliable colleagues, I commenced observations immediately on my own account. That was over forty years ago.

Results from the first led me to take a favourable view of its possibilities. With accumulating satisfactory experience tuberculin has been used by me in one or other form, and according to one or other procedure, without interruption up to the present time. Its continued employment has steadily confirmed my judgement in favour of its claim to be a specific remedy of much value—subject always to the proviso that, as with other potent remedies, its successful administration implies skill and experience in the selection of the suitable case and in the regulation of dosage. Distrust in its value I have found commonly expressed in loudest terms by those whose acquaintance with tuberculosis is limited and whose knowledge of the actual treatment is fragmentary or second-hand. Koch must not be held accountable for

the intemperate statements either of supporters or of critics. Nor be it thought that in the sphere of treatment Koch's outlook was limited to tuberculin and its applications. He approached the consideration of treatment from many angles. His incessant labours pointed the way to most subsequent developments in the direction of active and passive immunization, and no less to the ever-recurring search for chemotherapeutic agents. The investigators in tuberculosis are few who have not sometimes been surprised by evidence—in whatever corner of the field their research—that Koch had paced the ground before them.

I think it may surely be said without fear of dissent that in few, if in any, departments of medicine has there occurred during fifty years so complete an upturn of thought and practice as in that of tuberculosis. The credit for this is primarily due to Koch. To him we owe it that knowledge has replaced ignorance, that doubt and helplessness have largely disappeared, that preventive measures and therapeutic procedure are now inspired and controlled by ascertained fact, that the morbidity of tuberculosis has lessened, and that in all progressive countries the mortality from tuberculosis is tumbling rapidly. Robert Koch laid the solid foundations on which the rest has been built, and to him be the glory.

A British Medical Association Lecture

ON

NASAL SINUS INFECTION*

BY

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The nasal accessory sinuses are lined, like the nasal cavity itself, by a ciliated mucous membrane which, however, is not so rich in mucus-secreting glands. The action of the cilia, which work upwards towards the ostia, normally keeps the sinus free from secretion.

The reactions of the mucous membrane to infections have recently been the subject of research, and it is perhaps legitimate to conclude that retention of mucus or of pus in a sinus is an indication that the cilia have failed in their attempt to remove this, owing to damage to, or destruction of, the ciliary mechanism. The aim of surgery in treating sinusitis is to remove the discharges from the mucous membrane in order that it may be rested, and may utilize such power of spontaneous recovery of function as it possesses. What, then, are the infections that attack the nose, and why should such infections involve the accessory sinuses? It is being more and more clearly recognized that mucus-lined cavities are subject to catarrhal and infective inflammation, somewhat in proportion to the degree of obstruction to their drainage and ventilation. Thus it is in nasal cavities that show some deviation from the normal that nasal sinus infection is more likely to occur. It is certainly unusual for these complications to occur in a perfectly healthy nose unless the original infection is a very virulent one or the resistance of the individual is for some reason considerably lowered. The predisposition of individuals to upper respiratory tract infections has been shown to be increased when vitamin A is deficient in the diet, whilst a lack of endocrine balance, and occasionally some form of allergy, are other factors that lay the mucous membrane open to infection.

* Read before the Chesterfield Branch on March 11th.

There seems to be no doubt that influenza is the most potent factor in the causation of sinus affections, though any organism that can cause an acute coryza (and I include here those organisms associated with the specific fevers) may, if conditions are favourable, produce sinus complications.

ABNORMALITIES PREDISPOSING TO SINUSITIS

It may be well, for a moment, to turn our attention to a consideration of the nasal passages and some of the common abnormalities that are met with there. There is no need to remind you that the outer wall of the nose is its most important part, because it is under the middle turbinate that the anterior group of sinuses have their openings. The frontal sinus lies most anteriorly, then come the anterior ethmoidal cells, the maxillary antrum further back, whilst above the middle turbinate the posterior ethmoidal cells and the sphenoidal sinus open into the spheno-ethmoidal recess. Consequently all forms of nasal obstruction, either by actual pressure or by inducing congestion, may interfere with the drainage from these sinuses or affect their aeration, and so render them more sensitive to the spread of infection from the nasal passages.

A deviation of the septum, whether traumatic or otherwise, naturally plays a large part in causing obstruction in the middle turbinate region. This is the most serious form of obstruction, as it causes more severe inflammatory disease of the accessory sinuses than does obstruction elsewhere, for such a deformity may interfere not only with the drainage and ventilation of the anterior group of sinuses, but also, by blocking the olfactory fissure, may impair that of the posterior ethmoidal cells and sphenoidal sinuses as well. Besides high deviations of the septum there are other conditions which may cause obstruction in the middle turbinate region.

We have hypertrophic conditions of the middle turbinate itself and extra air cells in the middle turbinate, which is merely a folded-over portion of the ethmoidal labyrinth. These may close the olfactory fissure, or press unduly on the diatus semilunaris. Then again, an enlarged bulla ethmoidalis may obstruct the hiatus semilunaris and disturb its contour, thus interfering with the ventilation and drainage of the anterior group of sinuses. Finally, the infundibulum itself is often surrounded by ethmoidal cells, and an extra large one in the region of the uncinate process may block the infundibulum and so cause a predisposition to infection and inflammation.

The conditions mentioned are by no means unusual, and when combined with the appropriate pathogenic micro-organisms and a lowered resistance of the individual, it is scarcely to be wondered at that nasal sinus infection is so commonly met with.

EXAMINATION OF A TYPICAL CASE

It will now be well to consider an acute infection of nasal origin and its mode of spread to the sinuses.

When infection occurs I think it is true to say that the maxillary antrum is always involved in the process. Though the antral condition may often subside and leave some other sinus more prominently involved, in the initial stages it seldom, if ever, escapes. When, during a common cold, the symptoms such as headache, pain, tenderness, unilateral nasal discharge, redness or swelling of the face lead one to suspect a sinus infection, a careful nasal examination must at once be undertaken. The mucous membrane will be found to be intensely engorged. Introduction of a pledget of cotton-wool wrung out of 20 per cent. cocaine will not only mop up any secretion, but will also cause the inflamed mucosa to shrink, and make

inspection of the middle meatus of the nose easier. Pus may be seen in this cleft either anteriorly or far back in the nose. When this is mopped away a further pledget of cotton-wool with cocaine should, if possible, be inserted right under the middle turbinate to shrink up the mucosa in the region of the hiatus semilunaris, and enable one to come to some conclusion as to the origin of the pus. When the pus is seen far forward, near the anterior end of the middle turbinate, its origin is probably from the frontal sinus or ethmoidal cells, particularly if it reappears quickly after being mopped away. If it is seen far back in the cleft, and if some alteration in the position of the head, such as putting it between the knees and turning the affected side uppermost, causes it to reappear, then this occurrence is evidence that the pus comes from the maxillary antrum, as the altered position of the head places the ostium of this sinus in a situation more suitable for drainage than that afforded by the upright posture.

Further Steps in Diagnosis

It is important for us to ascertain definitely what sinus is involved, whether the maxillary antrum alone is affected, or whether there may be some involvement of the frontal and ethmoidal sinus as well. It is, I think, true to say that when the frontal sinus and ethmoid are involved the antrum is always affected, but the converse does not hold good. We can obtain direct proof of the presence of pus in the maxillary antrum by puncturing it and sucking out or washing out the contents. This relatively simple procedure is best carried out under the inferior turbinate. I find a Coakley trocar and cannula the most efficient instrument for this purpose.

When this proof puncture is positive we have established the fact that the antrum is infected, but we have not determined whether it alone is involved or whether it is acting as a reservoir for pus which has been secreted in one of the sinuses higher up—the frontal sinus or the anterior ethmoidal cells. To ascertain this it is really necessary to wait some little time and then see whether pus again appears under the middle turbinate. This inspection is facilitated by the introduction of a Killian speculum beneath the turbinate after cocainization. It has been said that it is possible to introduce a Hartmann's cannula into the frontal sinus and aspirate it, but in acute cases my experience is that the attempt is too painful and difficult, on account of the swollen mucosa, and should not be tried. Still more do I condemn, for diagnostic purposes, the proposal that a portion of the turbinate should be resected in order to facilitate the passage of a cannula.

It is customary to try to obtain confirmatory evidence of sinus infection by transilluminating the cavities, and though in some cases it may be of use, it is apt to be fallacious, more particularly in the acute conditions. A good *x*-ray film taken from a proper angle is a more useful help.

Treatment in Anterior Sinus Infection

When it is established that one or more of the anterior group of sinuses is affected, what should be our line of treatment? This should be both general and local. General treatment consists in ordering the patient to bed, more particularly if the headache and general disturbances are severe, and giving broken doses of calomel every hour until the bowels are well open. The leucodescent head bath, if available, should be applied, and 15 grains of aspirin given to cause diaphoresis. Local treatment consists in the careful application to the middle meatus of a 20 per cent. solution of cocaine on cotton-wool at least twice a day. This is, to my mind, the most valuable procedure that the surgeon can adopt, as by its use the mucosa of this region is rendered ischaemic and the drainage from the sinuses markedly facilitated. Douching with very hot saline solutions after this will further relieve the congestion of the mucosa. In the interval, steam inhalations of menthol in friars' balsam every three or four hours is a most useful help in facilitating the discharge of inflammatory products from the sinus by shrinking the mucosa and stimulating ciliary action. Phenalgin in 7-grain doses may be of value in relieving the headache.

The large majority of cases undergo resolution by these means, more particularly if the local application of cocaine by the surgeon is efficiently carried out. Some surgeons rely on more frequent puncture and lavage of the antrum. In my opinion this is seldom necessary after the first aspiration, and, if efficient drainage can be assured by other means, antral irrigation should be dispensed with. In very severe cases it may be justifiable to perform it four or five times at three-day intervals. After the antrum has been emptied it is better to use an oily solution, such as liquid paraffin containing 1/4 per cent. phenol, in preference to the watery solutions usually recommended. For many years I have used 1/4 per cent. phenol in an American preparation called benzoinaquol, but this is no longer available.

So far we have considered the spread of infection to the anterior group of sinuses as occurring by extension from the nasal cavity, but it must be remembered that the maxillary antrum may be infected by the spread of infection from the roots of teeth that are in contact with the antral cavity. This route of infection is responsible for about 20 per cent. of all cases of maxillary antritis. There is no need to mention in detail the causes of dental infection, but apical abscesses, faulty extractions, and periostitis, when the second premolar and first and second molars are involved, are among the most common. The antrum in these cases of dental origin is apt to contain very foul-smelling pus, but usually clears up after intranasal treatment and aspiration. Two or three washings-out with an oily solution may be necessary. It goes without saying that the tooth which is the cause of the infection should be removed.

Although in a large majority of cases satisfactory drainage occurs, or can be promoted through the ordinary channels, there are cases in which from the outset the normal ostium becomes occluded and the products of inflammation remain locked up in the sinus. In these cases the symptoms may be extremely severe and the inflammation show itself externally by swelling. When the maxillary antrum is the site of a closed empyema there may not only be a bulging of the naso-antral wall in the region of the meatus, but there may also be a swelling under the upper lip (in the labio-gingival fold) if the abscess has burst through the anterior wall of the antrum in the region of the canine fossa, where the bone is thinnest. In these cases the measures to be adopted should be as conservative as possible, but it will not be possible to avoid opening the abscess under the lip and making a proper counter-opening into the nose through the naso-antral wall. If this is done the inflammation should rapidly subside.

Acute empyema in the frontal sinus and in the anterior ethmoid may produce symptoms such as intense pain in the forehead, with redness, swelling, and oedema in the region of the inner canthus and upper eyelid ; there may even be swelling over the frontal bone if acute osteomyelitis has occurred. It may not be easy to determine the origin of the swelling, but it may be said that when the frontal sinus is the source the swelling and tenderness is apt to be near the inner canthus over the inferior wall of the sinus, whilst if the ethmoid is responsible the

swelling is usually lower down in the region of the lachrymal sac, and may, indeed, be mistaken for a lachrymal abscess. It is a difficult matter to decide whether a case with swelling and oedema of the eyelid and in the region of the inner canthus should be treated conservatively by antral puncture, and possibly by removal of the anterior end of the middle turbinate, or whether an external incision should at once be made. A good many cases, particularly in children, where there is some oedema of the eyelid and swelling in the lachrymal region, undoubtedly settle down when purely intranasal conservative measures are employed, but no hard-and-fast rule can be laid down, as each case must be judged on its merits. Suffice it to say that in those cases in which the infection is particularly acute, where the onset of external symptoms is rapid, and where the toxaemia is severe, I think it essential that an external incision should be made, and that the surgeon who withheld it would submit the patient to a risk of orbital cellulitis, meningitis, or other serious complication.

In no case, however, should any elaborate operation be attempted, and the surgeon should content himself with evacuating the pus, inserting a rubber drain, and leaving the wound open in its lowest part. It is, however, of the utmost importance that a good counter-opening should be made through the ethmoid labyrinth into the nasal cavity, so that the main drainage may take place this way. If, after twenty-four hours, resolution of inflammation appears to be taking place, the rubber drain in the external wound may be removed, and it can then be allowed to close. If the external swelling appears over the anterior wall of the frontal sinus the bone should not be interfered with for fear of setting up osteomyelitis ; but if this complication has already occurred, as is likely to happen if the abscess has burst through the diploic bone, removal of the bone is a paramount necessity, and this should be extended until healthy bone is reached.

Involvement of Posterior Sinuses

Acute infection of the posterior group of sinuses is a much rarer complication of nasal disease, and is more difficult to recognize. If we recall the position of the ostia of the posterior ethmoidal cells and of the sphenoidal sinus as they open into the spheno-ethmoidal recess, it is clear that secretions from these sinuses must appear either in the olfactory fissure between the septum and the middle turbinate, or posteriorly in the choana above the middle turbinate, or on the lateral wall of the naso-pharynx. In this situation the discharge can only be seen by posterior rhinoscopy with the mirror—not always an easy procedure. The inspection of the olfactory fissure from the front may be facilitated by the use of the long-bladed Killian speculum, which presses the middle turbinate out of the way and affords a more direct inspection of the anterior wall of the sphenoidal sinus, and permits the insertion of a trocar and cannula into it. In this region the careful use of cocaine is again of the utmost value.

The symptoms that are associated with acute infection of the posterior group of sinuses are somewhat equivocal, but in the case of the sphenoidal sinus the headache is usually severe, and tends to be localized to the parietal and temporal regions, often radiating to the ears. A curious discomfort is often felt in the ears themselves, and ocular symptoms, particularly tenderness of the eyeball, are often marked. General symptoms, such as fever, sleeplessness, giddiness, and malaise are more prominent than is the case in an ordinary cold, and these symptoms tend to get worse instead of better.

Treatment should be on the lines indicated for the anterior group to ensure as free drainage as is possible, but when the cocaine-bearing cotton-wool is inserted by the surgeon it should be placed between the septum and the middle turbinate to keep the olfactory fissure as widely open as possible. It may be necessary to insert a trocar and cannula into the sphenoidal sinus and suck out the secretion. Access to the anterior wall of the sphenoid is not always easy, but in a considerable number of cases it can be reached, especially if a long-bladed Killian speculum is used. It may, however, be necessary to give the patient some gas and oxygen, as this region of the nose is difficult to anaesthetize locally, particularly if the mucosa is in an inflamed condition. In some cases where the septum is markedly deflected it may be necessary to resect a portion of the middle turbinate.

In the treatment of all these cases of acute nasal sinus infection our aim is to promote the resolution of inflammation as soon as possible and to establish immunity. It has recently been suggested that when any toxic process is present in the body there is a tendency to acidosis, and that this acidosis demands compensation from the bases circulating in the blood or in the tissues, which are no longer available to play their part in the process of immunity. This affords some explanation of the fact that the administration of sufficient sodium bicarbonate to keep the urine alkaline will often help to promote the resolution of inflammation and bring about a more speedy cure.

Chronic Sinusitis

The consideration of nasal sinus infection in its more chronic form opens so large a field that it will not be possible to do more than touch upon it. We have seen that the sinuses when affected acutely show a marked tendency to resolution, but in some cases the infection overcomes this tendency and the disease becomes chronic. Among the causes which may give rise to this are: (1) conditions which interfere with normal drainage ; (2) excessive virulence of the infecting micro-organisms ; (3) repeated attacks of inflammation ; (4) the presence of inflammatory changes in the mucous membrane ; (5) secretion flowing in from another sinus ; and, lastly, the susceptibility of the individual.

Patients suffering from a chronic nasal sinus infection usually come under observation on account of headache, nasal obstruction, discharge, or the complaint of a chronic cold in the head. On the other hand, many cases may be discovered in the search for a septic focus that is now conducted with such vigour in an attempt to explain digestive, respiratory, ocular, or other phenomena. It is therefore of the utmost importance that we should be able to deal adequately with these chronic conditions. In some ways recognition of sinus infection in its chronic form is easier than when it is acute, in that the nasal passages are less severely congested and examination is therefore less difficult.

The detection of pus under or above the middle turbinate or in the post-nasal space, the presence of polypi in the nostril or in the choana, crusting in the nose or nasopharynx, or secondary changes in the larynx will help to guide us towards the group of sinuses that is affected, and it should not be very difficult, with careful examination, *x*-ray photography, proof puncture, and suction to get a reasonable idea of the extent of the infection and its exact situation. When suppuration is well established in any sinus it is, to my mind, rather a waste of time to devote much attention to attempted relief by puncture and lavage, and treatment should, I think, be mainly surgical. I am not in favour of drastic surgical measures for the cure of suppuration in any sinus, and think that if steps are taken to provide adequate drainage the vast majority of cases will settle down satisfactorily, but the drainage provided by the operation must be sufficient to drain the cavity completely. Surgery abhors dead spaces, and nowhere more so than in the sinuses of the nose.

DETAILS OF LOCAL AND GENERAL TREATMENT

For the maxillary antrum the purely intranasal opening under the inferior turbinate, if of sufficient size, will usually suffice, and in this connexion I should like to say that the inferior turbinate should be left intact, or only the smallest portion of its lower border near the anterior end removed. I seldom find it necessary to resort to the Caldwell-Luc operation, and I actively dislike the Denker and Canfield operations, as I can see no reason for the destruction of the anterior angle that these operations seek to encompass. I regard the treatment after the intranasal operation as of importance. It may be summed up in the word—inactivity. In other words, I do not believe in washing out the cavity, but prefer it to drain naturally through the opening provided. If the discharge does not diminish with sufficient rapidity, and it is thought that lavage might help, the solution used should be an oily one. General tonic treatment and the use of sufficient alkalis to keep the urine alkaline will help the resolution of inflammation.

In recent years the question of chronic infection of the ethmoidal labyrinth has received a great deal of attention, and our views about it have undergone alterations that have somewhat disturbed previously accepted ideas. I am accustomed to recognize two forms:

1. The hyperplastic type with polypus formation.
2. The suppurative type.

As both types vary in extent and in severity, so, naturally, does the treatment required for their relief. The basic principles of aeration and drainage for the successful treatment of all sinus infection, however, hold here as elsewhere, and I regard it as important to remove the middle turbinate, more particularly the high anterior part that overhangs the infundibulum, and thus to free the approach to the cells. In mild cases the prolonged application of tampons of 10 per cent. argyrol in glycerin may effect a cure in hyperplastic cases, whilst in others the whole polypus-bearing area will require to be removed. The suppurative cases, again, vary in degree, and so does the extent of treatment. Sometimes after removal of the middle turbinate a very limited removal of particular cells will effect a cure, whilst in others the complete exenteration of the whole labyrinth by intranasal operation, or even by the approach afforded by an external incision, may be necessary.

Suppuration in the frontal sinus presents a variety of problems and an infinity of possible solutions to them. Our endeavour should be to provide the aeration and drainage, and then to be as conservative as possible, always remembering, however, that in the vast majority of cases the anterior ethmoidal cells are also involved, and that the treatment of the ethmoid is the key to the frontal sinus.

As regards the variety of methods of intranasal approach I will only say that they demand considerable experience and some operative skill. I am not in favour of cutting or rasping the fronto-nasal duct, owing to the tendency to new bone formation and recurrence of obstruction. I believe that if the region of the infundibulum can be cleared of cells and the approach to the ethmoid freed, the dilatation with metallic sounds will often be sufficient to effect a cure. In intractable cases in which an external operation seems to be indicated I prefer the operation that I described many years ago, and which goes by my name, as it seems to me to provide adequate drainage whilst preserving the lining mucosa. Moreover, this is accompanied by no deformity, and by a scar which is practically invisible.

Chronic infection in the posterior group of sinuses is by no means easy to diagnose, and usually comes under observation owing to descending infections manifesting themselves in the digestive or respiratory tract, or on account of eye symptoms, such as retrobulbar neuritis, optic atrophy, or oculomotor phenomena. General toxic symptoms, or intense occipital or parietal headache, may also demand investigation, whilst local symptoms, such as dryness and crusting of the pharynx or secondary laryngeal inflammation, may be found to be of post-nasal origin. The treatment of the posterior group consists in opening them as freely as possible and allowing them to drain. The middle turbinate should be resected and the large posterior ethmoidal cells entered. It should be remembered that the most posterior ethmoidal cell is, as it were, stuck on to the outer part of the anterior wall of the sphenoidal sinus, and that lateral to this junction is the dangerous area of the cavernous sinus. The anterior wall of the sphenoidal sinus is readily broken down, and free drainage and aeration thereby secured.

ATEBRIN IN THE TREATMENT OF SEVERE MALARIA

BY

A. J. ORENSTEIN, C.M.G., LL.D., M.D.

(From the Johannesburg General Hospital, Department for Tropical Diseases.)

The following is merely a brief report of the results obtained with atebrin (until recently known as erion) in the treatment of eight cases of severe malaria in hospital. The number of cases is too small to admit of any definite conclusions being drawn, but the work was interrupted by my departure to Europe. It seemed, however, that in the early stages of experience with a new remedy reports even of a few cases would be of some value.

The cases here recorded were deliberately chosen for the following reasons. They gave positive blood findings; they were severe—two very severe—cases; and they were residents of Johannesburg, where there is no endemic malaria—their subsequent history in respect of recrudescences, therefore, would be clear-cut. The plan of treatment was the same in all cases. One decigram of atebrin and one centigram of plasmoquine were given three times a day for four successive days; after a few days the course was repeated.

The plus signs on the temperature charts in connexion with the blood findings have the following significance: +++ = numerous parasites in every field in a thick drop preparation; ++ = numerous parasites; and + = parasites seen in most fields. The original charts were four-hourly, but the reproductions have been reduced to a twice-daily basis, and terminate when the temperature settled down to normal. All the blood examinations were done personally by me. Giemsa stain was used.

Up to the time of leaving Johannesburg (March 10th) none of the patients treated had relapsed. One patient now residing in London, who was severely ill, reported recently as being in perfect health ever since the treatment, which terminated early in January—that is, about four months ago. Slight scleral jaundice was observed in one or two cases, but it is uncertain whether this was due to the drug or to the malaria. No unpleasant symptoms due to atebrin were observed, but in three cases there were the headache and cramps one sees occasionally in patients somewhat intolerant to plasmoquine. On the whole, I am most favourably impressed with the value of atebrin.

CASE I

A male native, aged about 19 years, was admitted on September 26th, 1931, with a history of several previous attacks of malaria. Present attack: first rigor on day of admission; spleen enlarged and palpable. Atebrin and plasmoquine were started on September 29th and repeated

on October 8th. Results of blood examinations are recorded on temperature chart.

CASE II

A male native, aged 40 years, was admitted on October 17th, 1931, with no history of previous attacks of fever or of rigors; spleen palpable. A course of atebrin and plasmoquine, started on October 23rd, and repeated on October 30th. Blood findings on temperature chart attached.

CASE III

A male native, aged 29 years, was admitted on October 19th, 1931; there was no previous history of malaria or of rigors. A course of atebrin and plasmoquine was begun on October 21st and repeated on October 30th. Parasitic findings shown on temperature chart.

CASE IV

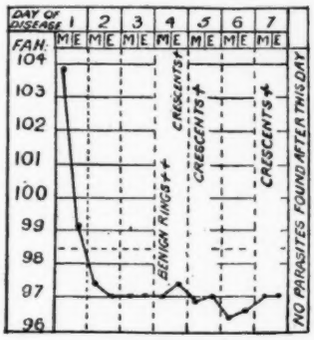
A male European, aged 19 years, was admitted on December 26th, 1931, with a history of numerous previous attacks of malaria. History of present illness: sick about six weeks, and stated that he had had fever every evening for the previous three weeks, and had taken quinine regularly throughout this time. A course of atebrin and plasmoquine was commenced on December 28th and repeated on January 6th, 1932. Blood findings and temperature shown on accompanying chart.

CASE V

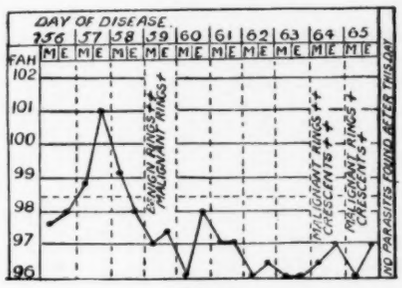
A European woman, aged 20 years, was admitted on January 19th, 1932. She had had several attacks of malaria. The spleen was palpable below the costal margin. Present illness: five days with fever every night. This woman was very ill on admission, verging on coma, with slight confusion. A course of atebrin and plasmoquine was started on January 20th, and repeated on January 28th. On the third day of the second course she developed slight cyanosis and cramps, and the treatment was discontinued; so she only had ten doses in the second course. Owing to family circumstances she left the hospital on that day, apparently well and promising to return, but has not since been seen. Blood findings shown on temperature chart.

CASE VI

A European woman, aged 34 years, was admitted on January 10th, 1932. She stated that she had had fever practically all the time for the past two months. Had had quinine by mouth and two intramuscular injections before



CASE I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FAH
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MALIGNANT RINGS +
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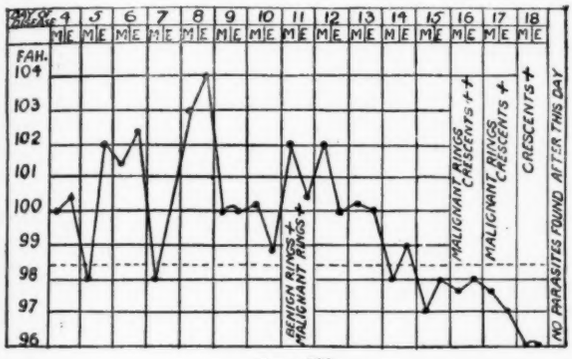
MALIGNANT RINGS +
CRESCENTS +
NO PARASITES FOUND AFTER THIS DAY

CASE II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MALIGNANT RINGS
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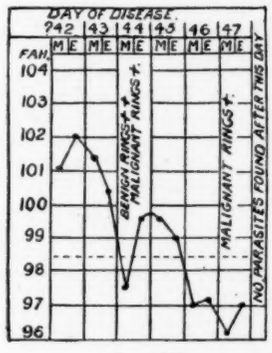
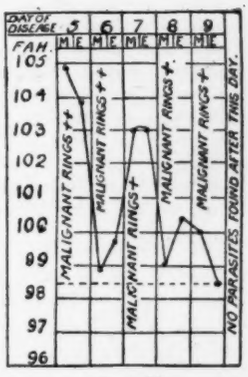
CRESCENTS +
NO PARASITES FOUND AFTER THIS DAY

CASE III



CASE IV



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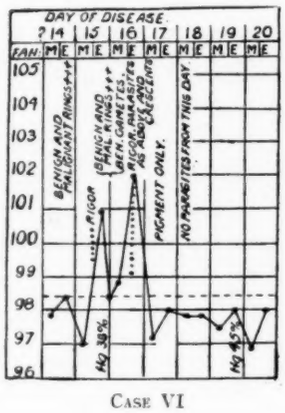
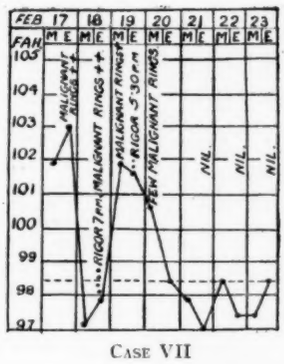


CASE VI



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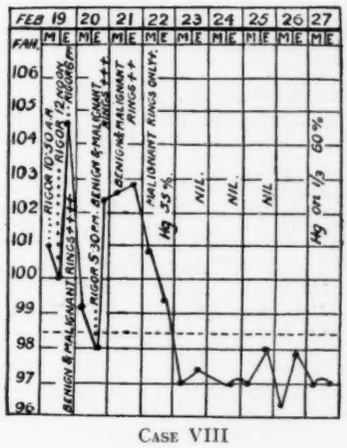

CASE VIII

admission. The spleen was palpable one inch below the costal margin; haemoglobin was 38 per cent. She was between seven and eight months pregnant, and obviously very ill; she seemed confused. A course of atebrin and plasmoquine was begun on January 17th. At the end of this treatment she was very much improved. Mental symptoms cleared up forty-eight hours after admission. On the fifth day haemoglobin was 45 per cent. The course was repeated on January 26th. In addition she received 1 per cent. arsenical solution —3 minims, rising to 5 minims, three times a day. She is still in hospital awaiting parturition. On February 9th her haemoglobin was 75 per cent. She is walking about and is apparently quite well. Blood findings shown on temperature chart.

CASE VII

A male European, aged 34 years, was admitted on January 17th, 1932, with a history of numerous attacks of malaria. Present illness over a week. Complained of usual symptoms of fever, especially very severe headache. He was slightly jaundiced; the spleen was just palpable; and he had very septic teeth. Blood findings indicated on chart. At the date of writing (March 1st) he is still in hospital awaiting dental attention, but is otherwise well. A course of atebrin and plasmoquine was given, and a second similar course was started on February 27th.

CASE VIII

A male European, aged 28 years, was admitted on February 19th, 1932, with a history of malaria for over a month and of previous attacks. Mentally somewhat dull, verging on coma. Decidedly jaundiced. Pulse bad. Spleen was palpable 2 cm. below costal margin. Complained of very severe headache. Blood examination showed a mixed infection, with practically every blood cell containing a parasite. Many blood cells contained two parasites. Atebrin and plasmoquine were given as above. The results of the blood examination are recorded on the chart. Haemoglobin estimation was done with the Dare haemoglobinometer. A second course was started on February 27th. He is now convalescent.

The last case was of extreme severity, and would be considered as one in which quinine should be given intravenously. One would be justified in regarding this case as being in the pre-haemoglobinuric state. His recovery under atebrin-plasmoquine I regard as a particularly striking demonstration of the efficacy of these drugs.

AVERTIN ANAESTHESIA IN CHILDBIRTH

BY

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The following investigation has been carried out with the purpose of determining to what extent avertin anaesthesia is of value in childbirth. The anaesthetic has been administered to forty-five patients—thirty-two of whom were primiparae and thirteen multiparae. Although the number is very small, some idea has been gained of the value of the method. The whole technique has been made as simple as possible, so that the anaesthetic may be of use in general as well as in hospital practice.

TECHNIQUE

Preparation of Avertin for Use.—All patients have been weighed as far as possible at the end of the eighth month, and the appropriate dosage read off from the Bayer Products Ltd. avertin obstetric dosage table. A 2½ per cent. solution has been used, which corresponds to 0.075 c.cm. per kilogram body weight. A green glass bottle is heated to 40° C. by immersion in hot water, and the measured quantity of Squire's redistilled water run into the bottle. The avertin, measured in minims, is added, and the mixture shaken for several minutes. Occasionally a white deposit appears, but this will dissolve on continuous shaking. By the use of redistilled water instead of distilled water the solution remains unchanged for as long as one month; thus the drug can be made up and kept ready for use. Before injection of the anaesthetic, the solution is tested by adding to 5 c.cm. of it one drop of 1 in 1,000 Congo red; the red colour should remain unchanged. If the solution is impure, dibromacetaldehyde is liberated, which turns the red to a blue colour. The solution must then be discarded, and a fresh one prepared. This has been necessary three times in the present series.

Administration of Avertin.—It has been found during the course of the investigation that the most advantageous time at which to give avertin is when the os is fully dilated in primiparae, and at three-quarter dilatation in multiparae. On admission to the labour ward, provided that time permits, the patient is bathed, shaved, and given a simple enema. Avertin cannot be administered unless an enema is given and the rectum is empty. The necessary apparatus consists of a glass funnel, to which is attached a No. 6 catheter and a measuring flask, into which the avertin is measured from the bottle. In many of the cases only two-thirds of the calculated dose was used, while in the remainder the total amount was given. At the termination of a pain the patient is placed in the left lateral position, the anus swabbed with biniodide, and the catheter inserted about three inches into the rectum, the funnel and tubing having been previously filled with the solution. The fluid as a rule runs in very easily, but occasionally the catheter has to be manipulated before the flow begins. The injection is made slowly. Should a contraction occur during the administration, the catheter is withdrawn, and the anus closed by pressure on the buttocks, so as to prevent ejection of the avertin.

EFFECTS OF AVERTIN

On the Mother.—The effects of avertin were found to vary considerably. In some patients the result was miraculous. A noisy, unruly patient has immediately become drowsy and lapsed into a deep sleep, while others have shown no sign of drowsiness until as long as twenty-five minutes after the injection. In the present series the average time at which drowsiness occurred was eight and a half minutes after administration. A few patients became absolutely unconscious, only stirring very slightly during the pains, and being quite unaware of the birth of the child. The majority, although asleep between the pains, wakened with each contraction, and were frequently difficult to control owing to arching of the back and movements of the arms and legs. This opisthotonos was more evident than in labours without anaesthesia. In a small proportion of cases, especially in multiparae, the patients did not become drowsy, but admitted that the pains were less severe after the avertin injection.

The time interval between contractions was recorded before and after administration, and it was found that the interval between pains was increased, thus unduly prolonging the second stage. The average duration from the administration of avertin until delivery was two hours thirteen minutes in primiparae. In some of these cases avertin was given at three-quarter dilatation, and in others at full dilatation. The third stage of labour has been concluded normally, no excessive haemorrhage having occurred, with separation of the placenta. Many of the patients have slept peacefully for several hours after delivery. No dangerous symptoms have followed avertin administered in the recommended dosage. In no case has either cyanosis or difficulty in breathing occurred. The respiration rate is sometimes slowed, sometimes quickened, while the depth is diminished. The pulse is slightly increased. The blood pressure falls on an average by about 10 mm. Hg.

On the Child.—Avertin does not affect the child in any way. After delivery it immediately cries lustily and progresses along normal lines. Five of the infants were premature. One of these infants was delivered by Caesarean section, avertin being used as a basal anaesthetic, supplemented by gas, oxygen, and ether. The mother was suffering from confusional insanity of pregnancy, and termination was advisable. The child appeared to be of about thirty weeks' gestation, and survived its birth by ten hours. Great difficulty was experienced in reviving one child where the second stage lasted three hours twenty minutes. Morphine 1/4 grain, and scopolamine 1/150 grain, had been given three hours before avertin and six hours before delivery.

There were two stillbirths in the series, but neither could be attributed to avertin. One occurred in a breech presentation, complicated by prolapse of an abnormally long cord, and the other in a primipara who had had no previous ante-natal care or treatment for venereal disease. She was admitted in labour with gonorrhoea and primary syphilitic sores on the vulva. She was an extremely noisy patient, so that it was determined to give avertin early in the first stage and note its effects. The patient lapsed into drowsiness for five hours while the os slowly dilated. During the second stage the foetal heart began to fail, but owing to her venereal condition it was inadvisable to apply forceps, otherwise the child might have been saved.

ILLUSTRATIVE CASES AND COMMENTS

The following ten cases illustrate the chief points of avertin anaesthesia.

Case No.	Age	Parity	Degree of Dilatation of Os when Avertin Given	Amount of Avertin Given	Onset of Drowsiness Occurred in—	Time Interval Between Avertin Administration and Delivery	Interval between Pains		Condition of Child	Notes
							Before	After		
					min.		min.	min.		
1	26	First	Three-quarters	Two-thirds total dose	10	2 hrs. 25 min.	1	4½	Good	Successful. Very drowsy, but could be roused. Painless delivery
2	21	First	Three-quarters	Two-thirds total dose	23	8¼ hrs.	5	8	Good	Unconscious during early part second stage. Delay followed avertin. Effect worn off after 4½ hours. Not satisfactory. Delivery completed without anaesthesia
3	21	First	Full	Two-thirds total dose	10	1 hr. 14 min.	2	3	Good	Completely successful. No delay. Painless delivery
4	17	First	Full Head coming down	Total dose	10	½ hr.	5	4	Good	Very drowsy, but restless. No delay. Satisfactory anaesthesia
5	22	First	Full	Total dose	8	4 hrs. 15 min.	4	7	Good	Unconscious during early part second stage. Some delay. Effect of avertin worn off before delivery
6	17	First	Full	Two-thirds total dose	10	2 hrs. 20 min.	6	6	Stillborn	Breech presentation with prolapse of cord. Delay. Avertin worn off before delivery, which had to be assisted by chloroform in a Junker. Unsatisfactory
7	20	First	Full	Two-thirds total dose	3	1 hr. 25 min.	3	5	Premature. 4 lb. 4 oz. Lived three weeks	Ante-partum haemorrhage due to marginal placenta praevia. Under C_2E_3 anaesthesia membranes ruptured; plugged with flavine gauze. Delivered on following day under satisfactory avertin anaesthesia
8	23	First	Full	Two-thirds total dose	3	27 min.	3	3	Premature. 5 lb. 7½ oz. Survived	Patient had very painful gonococcal arthritis of wrists. No delay. Rapid painless labour
9	23	Second	Three-quarters	Two-thirds total dose	2	1 hr. 13 min.	2	5	Normal	Deep drowsiness produced. Pains weaker and diminished in frequency. Delivery practically painless. Slept for two hours after delivery
10	25	Second	Full	Total dose	5	¼ hr.	2	2	Normal	Avertin was given too late, but drowsiness was produced and delivery was effected without much discomfort

It will be seen that the effect of avertin varies, like all other factors in labour. During the investigation the drug has been given to primiparae either at three-quarter dilatation or full dilatation of the os. Although some cases have been successful when the drug has been injected at three-quarter dilatation, it has, on the whole, been found more satisfactory to give it at full dilatation. If given too soon delay follows, because the uterine contractions become less frequent and weaker, and the effects of the drug pass off before delivery is completed. It can, however, be supplemented by chloroform in a Junker apparatus. In multiparae it is essential to give the injection at three-quarter dilatation, otherwise if full dilatation is awaited the head may come down so quickly that it may not be possible to administer the avertin.

Two dosages of avertin were used with a view to determining whether or not lesser dosages than those previously advocated were of value. In some cases only two-thirds of the dose, as calculated from the Bayer obstetrical table, was given. There did not appear to be much difference in the results obtained. The temperament of the patient seems to be the chief factor; the placid patient became more profoundly unconscious than the highly excitable, noisy patient when given corresponding doses. In two cases the injection was made by the maternity ward sister, two-thirds of the calculated dose being used, and both were satisfactory. The effective duration of the drug is, on an average, two hours, after which time it passes off.

The first five cases illustrated are normal labours in primiparae, and show the relation between the time of administration of avertin and the dosage used. The sixth case was that of a breech presentation complicated by prolapse of an abnormally long cord. At full dilatation the cord was replaced and avertin given. Unfortunately the frequency of the pains was diminished and the cord again prolapsed. The anaesthesia had passed off by the time of delivery, which had to be assisted by chloroform given by a Junker apparatus. A stillbirth resulted. Judged from further experience with avertin, it would have been better not to have used it in this case. Avertin is unsuitable in labours where the second stage is likely to be prolonged—that is, in disproportions and abnormal presentations—because of the diminished frequency of the pains. The seventh case is an example of where two anaesthetics have been necessary on two successive days. There was an ante-partum haemorrhage due to marginal placenta praevia. Under general anaesthesia (C_2E_3) the membranes were ruptured and the vagina packed with flavine gauze. On removal of the gauze twenty-two hours later the os was fully dilated, avertin given, and the patient experienced a comfortable and painless labour. This illustrates the advantage of avertin when a second anaesthetic is required, since it is well known that occasional deaths occur from delayed chloroform poisoning when this drug has been repeated during the same confinement. The eighth case is that of a patient suffering from painful gonococcal arthritis of both wrists. Her labour

was made more tolerable by avertin. The last two cases in the series illustrate the use of the drug in multiparae. It must be given when the os is three-quarters dilated. Several multiparae, intended for inclusion in the series, were on examination found to be too far advanced to admit of administration of the drug, since the head was on the perineum.

CONCLUSIONS

1. Avertin is of value in normal labours provided that it is given at full dilatation of the os in primiparae, and at three-quarter dilatation in multiparae.

2. It is of special value where a previous chloroform anaesthesia has been necessary in the same confinement.

3. It is contraindicated in disproportions and abnormal presentations, because of the diminution in frequency of the pains.

4. It is not dangerous, and can be administered by a competent trained midwife, provided that suitable precautions are taken to ensure the solution being tested before injection.

5. It is uncertain in its action. Given in doses according to weight it affects some patients more than others. Labour is sometimes delayed owing to diminution in the strength and frequency of the uterine contractions.

6. It is extremely pleasant for the patient. It allays mental anxiety, mitigates pain, rests the patient while the labour progresses, and sometimes gives a painless delivery. Many patients sleep for several hours after delivery, and there are no unpleasant after-effects.

7. It is harmless to the infant.

8. Avertin is worthy of trial in general and hospital practice, but cannot be regarded as sufficiently efficacious to enable the use of chloroform to be avoided during the delivery of the head in all cases.

9. More experience of its use is required to decide the merits of avertin compared with such drugs as paraldehyde.

The results of this investigation are very similar to those described by Connell[1] in his paper.

My sincere thanks are due to Mr. F. Neon Reynolds for his help and advice during the course of the investigation.

REFERENCE

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INJECTION TREATMENT OF INGUINAL HERNIA

BY

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Ten years ago, in spite of the fact that experiments had been made off and on for the previous seventy years, the idea of curing varicose veins by causing a chemical thrombosis would have been regarded by most people as the vapourings of a disordered imagination. The idea of curing hernia by means of subcutaneous injections seems still more impossible, and, until the rationale is understood, can only give rise to incredulity. When I first heard of it I was frankly sceptical, but on reading the literature it became obvious that the idea was by no means absurd, and the rationale suggested was not beyond the bounds of possibility, but was even highly credible. As the result of experiments during the past two years I am convinced that in the injection treatment for hernia we have a valuable addition to our surgical armamentarium, and this paper is brought forward in the hope that others will be stimulated to investigate further a line of non-operative surgery which offers a prospect of cure to many sufferers.

The number of people afflicted with hernia is enormous, and many are frankly afraid of the surgeon's knife. We cannot assure them that the operation is free from risk, nor is it a painless procedure ; and if unsuccessful the last state of the man is worse than the first. Quite apart from risk and pain, the operation requires a stay of three weeks to a month in hospital or nursing home, and a rest from strenuous work for two to three months afterwards. In contrast to this, the injection treatment carried out in properly selected cases is free from risk, involves no anaesthetic or operation, causes little pain, does not interfere with the patient's employment or social engagements, and, if not successful, leaves him no worse off than before.

MECHANICS OF HERNIA

To follow the argument one must understand how a truss keeps back a hernia. In addition to the existence of a sac, preformed or acquired, it is necessary, if the sac contents are to " come down," for the external oblique to be separable from the internal oblique and transversalis. If by any mechanical means this separation is prevented the hernia cannot descend. It is well known that ruptured persons hold themselves when they cough or sneeze to prevent their rupture coming down. A satisfactory truss likewise prevents the descent of the hernia by exerting enough pressure on the tissues directly superficial to the neck of the sac to prevent the external oblique being separated from the subjacent muscles. When ruptured subjects cough the abdominal musculature is strongly contracted ; the conjoined tendon is thus drawn backwards, but the inelastic aponeurosis of the external oblique, although drawn taut, is at a mechanical disadvantage. The neck of the sac may thus be allowed to open and, once contents enter, their semifluid character enables them to exert a dilating influence comparable in every way to the dilation of the birth canal by the unbroken " bag of waters." When the patient is not straining the conjoined tendon is slack, maintained by intra-abdominal pressure flush against the external oblique, and the hernia does not come down.

This suggests that if we could prevent the external oblique from separating from the subjacent muscular layers, the hernia would never " come down," in spite of the existence of a sac. This is what is attained in the injection treatment first devised by Dr. George Heaton[1] of Boston, Mass., exactly a hundred years ago and perfected by Dr. Ignatz Mayer[2] of Detroit, whose technique is here advocated.

By means of a suitable sclerosing fluid, a mass of tissue —microscopically, a foreign-body granuloma—is formed in the inguinal canal between the layers of the lower abdominal muscles and surrounding the sac and spermatic cord. The layers of muscle are firmly united together by the subsequent dense scar tissue by which it is replaced so that they cannot be separated, while the contraction of the scar tissue also constricts the sac, and the hernia is cured.

Although many thousand cases of hernia have been treated by the injection method by various surgeons in other countries, there has been reported no case of injury, whether temporary or permanent, to the testis or cord. Sections cut from experimental animals show that the cord passes undamaged through areas of artificial induration[3] and remains uninjured by the subsequent contraction of scar tissue. It is essential that a well-fitting truss should be worn from the commencement of treatment, and never removed day or night until several weeks after the final injection. The surgeon must see that the pad accurately covers the internal ring, and that even when the patient is lying down it is still exerting pressure. It must be of the spring pattern ; the elastic truss is, in my experience, useless. For the treatment to be successful the hernia

must be (*a*) entirely reducible, and (*b*) easily retained by a truss. The size of the hernia does not matter ; scrotal herniae are cured as well as the smaller varieties.

TECHNIQUE OF INJECTION

The patient is examined to make sure that he has a hernia which is reducible, and his own practitioner is also asked to verify that he has a hernia. This latter precaution is highly necessary, because when the patient is cured there is nothing to show for it except a hard mass in the groin, and those who have not seen the hernia " down " are incredulous as to cure. A well-fitting truss must next be obtained—a spring truss with a perineal band or else the rat-tail type. Care must be taken to see that the hernia is retained under all conditions. The loop of the perineal band should be stitched to the covering of the spring in the most convenient position, otherwise the band slips about, gets into the internatal cleft, and is soiled with faeces, etc. The patient is shaved on the affected side. Lloyd's " euxesis," obtainable from any chemist, is recommended for softening the hair before shaving, but any similar cream will do. A dry shave is a barbarity. The injection is made with the patient in a modified Trendelenburg position. Two blankets folded and placed under the sacrum raise that part of the body some six inches above the level of the couch, the head and feet resting on the couch at a lower level. The patient's muscles must be quite relaxed. The site of the injection is washed with industrial alcohol.

If the external ring is large enough, the skin of the scrotum is invaginated with the middle finger (for choice) of the left hand and the external oblique lifted up. The needle (No. 17 " summit "), mounted on the charged syringe, is inserted vertically over the site of the internal ring till the point is felt to pierce the aponeurosis. The piston is withdrawn to ensure that no vessel has been entered. The contents of the syringe are slowly injected, withdrawing the piston after every few drops to make certain that the point of the needle is still outside any vessel. It is often impossible with a small hernia to lift the external oblique as suggested above ; in these cases the needle may be inserted through the external ring into the inguinal canal either above or below the cord, which is identified and held out of the way, or the neighbourhood of the internal ring may be reached by inserting the needle vertically to the skin at a point just above Poupart's ligament and immediately external to the termination of the external iliac artery, identified by palpation.

NATURE OF SCLEROSING FLUID

The fluid as used by Mayer can be obtained from Mr. J. G. Parsons, 156, Church Road, Hove, in rubber-capped bottles of 1 oz. or in 1 c.cm. ampoules of clear glass under the name of " obturatin." The following is Mayer's formula:

Zinc sulphate	1 dr.
Phenol crystals	6 dr.
Glycerin	4 fl. dr.
Aq. cinnamomi...	1 fl. oz.
Fl. extr. pinus canadensis (dark)	5 fl. dr.
Sterilized chemically pure redistilled water ...	2 fl. oz.

Dissolve the zinc sulphate in the cinnamon water. Liquefy the phenol crystals by heating. Add the glycerin. Shake thoroughly until mixed and cooled ; then add the distilled water and finally the fluid extract of pinus canadensis. Shake thoroughly. Allow the fluid to stand for about a week, agitating the mixture several times a day. Subsequently it should be filtered. Before injecting, boil the solution in a glass tube or place in the sterilizer in a porcelain container. When cold the solution is muddy, but on heating it becomes clear and transparent, and looks like a rich port wine, hence the necessity for the clear glass, for if amber containers are used it is difficult to see when the solution has become clear. On drawing up the obturatin into the syringe it becomes cooler, and throws down a very fine precipitate, which passes without difficulty through a No. 17 hypodermic needle. In this precipitate, I believe, is the whole virtue of the solution.

The dose is 1/2 c.cm. for the first injection and 1 c.cm. for subsequent injections.

AFTER-TREATMENT

When injection is completed the needle is rapidly withdrawn, the site dried with cotton-wool, the groin dusted with talcum powder, and the truss reapplied by the surgeon. It is very important to impress on the patient that he must not endeavour to help the surgeon in any way, but must lie like a log and not cough or strain until the truss is on once more. When the truss is fitted the patient gets down from the couch, usually unaided. In a few hours' time there may be a bruised feeling in the groin. If this is severe he should lie down, apply a hot-water bottle on top of the truss (which must not be removed), and take ten grains of aspirin.

At four to seven days' interval (according to the reaction) further injections are given in the same manner as the first. The patient gets on to the couch and lies on the folded blankets *with his truss on*, and this is removed by the surgeon, who must warn him every time not to try and help in any way, but lie quite flaccid. Patients find it difficult to get this important point into their heads. After a few injections a hard mass is noticed deep in the inguinal region, and this gradually increases in extent as the injections proceed. When the entire inguinal region is so filled up it is impossible to identify the external ring, and the needle feels as if it is being inserted into rubber; the injections are left off for a fortnight, the patient still wearing the truss. At the end of this time the truss is removed, and the patient, lying down as if for injection, is asked to cough. No impulse should be visible or palpable. The truss is then reapplied, and in another fortnight's time is removed with the patient standing, and he is asked to cough again. No impulse should be visible or palpable, and the patient may now leave off the truss at night and when having a bath, but it should be worn during the day for another three or four weeks. He is then re-examined and the truss left off for good, but if he is doing any strenuous exertion, as a matter of precaution he is advised to wear the truss during the period of stress.

The total number of injections necessary varies from ten to twenty-five or thirty ; about fifteen to twenty may be taken as the average.

Occasionally when the needle is inserted through the external ring some coagulable fluid is aspirated into the syringe. With the needle *in situ* and a fresh syringe substituted it has been demonstrated that the fluid is clear and colourless, highly albuminous, and with a few white corpuscles and still fewer red. This is probably peritoneal fluid from the hernial sac, which has been entered by accident. The needle should be withdrawn and inserted afresh in a slightly different direction. In experimental animals the entry of the sclerosing fluid into the general peritoneal cavity has been followed by a plastic peritonitis, with death from obstruction due to adhesions and bands within a few days.[3]

Patients not infrequently complain of curious transient subjective sensations, such as burning in the scrotum or penis, on the inner side of the thigh, or a sensation of warmth round the anus. Occasionally a few seconds after an injection in the neighbourhood of the internal ring there may be a feeling of cramp in the distribution of the anterior crural nerve, followed by some paresis, which disappears in the course of a few days, leaving the patient none the worse.

On one occasion injection in the neighbourhood of the internal ring was followed by symptoms suggesting that the fluid had reached the periarterial sympathetic plexus surrounding the external iliac artery.

No case of new growth has yet been reported following on the artificial foreign-body granuloma.

DISCUSSION

The following advantages may be claimed for the injection method over operation. (1) The risk of an anaesthetic and operation is avoided. (2) The treatment being ambulatory, the need of going into hospital or nursing home is removed, and there is no loss of time for employment or enjoyment, thus effecting a very considerable economic saving. (3) The pain and discomfort of the injection treatment is very much less than with operation. Patients who have experienced both methods are enthusiastic in favour of the former. (4) According to those in other countries who have had a large experience running into thousands of cases, the end-results compare favourably with those of operation.

The following types of case are unsuitable for treatment by the injection method. (1) Those in which the hernia

is not completely reducible or where it is complicated by imperfect descent of the testis or other condition rendering the satisfactory fitting of a truss impossible. (2) Those in which there is active venereal disease of any kind or a definite history of tuberculosis. Mayer also considers a history of specific disease as a contraindication. (3) Those cases where the intelligent co-operation of the patient cannot be assured. For this reason it is not recommended for children, as their mothers cannot as a rule be relied on to see that the truss is properly worn day and night. In children, too, the loss of time entailed by an operation is not a serious factor. (4) Cases of haemophilia.

In twenty-five patients of ages varying from 5 to 70 years (three of them scrotal) who have completed treatment before the end of January, 1932, the result in eighteen has been an entire success. The remaining seven cases call for comment.

Case 1.—Abandoned after two injections because I was dubious as to the satisfactory progress of the treatment. At operation, a fortnight after the first injection, it was found that the inguinal canal was filled with young scar tissue and the conjoined tendon was very hard, but looked normal. The sac, together with a snip from the lower edge of the internal oblique, was sent for section, and the report showed dense fibrosis round the sac, with much new vessel formation ; no peritonitis. The strip of muscle showed fibrous tissue only.

Case 2.—Bricklayer, aged 51, with scrotal hernia since the age of 41. After twelve injections there was a hard mass in the right inguinal region, and when the patient stood without his truss he could cough, for the first time in his memory, without the scrotum being filled. Unfortunately, he was then allowed to leave off his truss at night, and a few days later developed a small strangulated hernia, which had to be operated on immediately. The inguinal canal was found to be filled with a dense mass of adhesions, so that it was impossible to separate the sac from its investments. A knuckle of bowel was found nipped at the neck of the sac, which latter was sutured as best possible in the circumstances. The patient on leaving hospital was advised to wear his truss as a precaution. The mistake in this case was in allowing the patient to leave off his truss too soon. He was one of the earliest in the series, and the first to be allowed to leave off his truss at all. All patients have since been made to wear their trusses for two to three weeks after the last injection before tentatively leaving them off at night in bed.

Case 3.—Greengrocer (late blacksmith), aged 64, with large left scrotal hernia which recurred immediately after operation in Westminster Hospital in 1925. He actually had a recurrence of the hernia before leaving hospital. This was due to bronchitis. This patient had twenty-two injections in 1930 and 1931, the last in May, 1931, but is still uncured. Failure is attributed to the truss being faulty. This is also one of the earlier cases.

Case 4.—Schoolmaster, aged 41, had a double hernia operated on in 1925, followed by recurrence on left side in 1928. Operated on again in April, 1929 ; recurrence October, 1929. The left external oblique presented a slit two inches long through which there was a bulge on coughing. The right side was also weak. After twenty-two injections on the left side and fourteen on the right the condition is considerably improved. There is a hard mass in both inguinal regions, and the slit in the left external oblique is no longer obvious. It is not claimed that this result is perfect, and the case was undertaken as an experiment. Nevertheless, the patient is very pleased with its results, and says he feels much stronger in both inguinal regions.

Case 5.—Little girl, aged 9 years: right inguinal hernia. After a dozen injections the hernia was not cured, and she underwent a radical cure some six months after cessation of treatment. At operation it was found that the external and internal oblique were closely adherent, and had to be dissected apart with the edge of the scalpel. A small tongue of omentum was adherent to the sac, and without doubt this was the cause of the failure.

Cases 6 and 7.—These have had small recurrences, and are having some more injections.

It should be noted that cases with a single inguinal hernia may develop a hernia on the opposite side during the course of the treatment when the second ring is weak. This has occurred in two instances.

The cure of eighteen cases out twenty-five treated (76 per cent.) is highly satisfactory when it is realized that the work has been experimental, and, although the technique followed has been evolved and used successfully for over thirty years by Dr. Mayer in the United States, I have had no opportunity of seeing the work of that pioneer, having had to learn from personal failure and perfect my techique by the laborious method of trial and error. It is recommended that those who may wish to investigate this new line of treatment should ensure for themselves that they will have sufficient cases for experiment ; one or two are not enough. In addition to the twenty-five cases mentioned above, I have another seven or eight whose treatment is already completed, but whose cure is still too recent to be claimed as established. There are also another ten or twelve in various stages of treatment.

One case of particular interest, as showing that previous unsuccessful operation is no contraindication to the injection treatment, is that of a publican who was operated on in January, 1930, for a left inguinal hernia. He had a bad cough after the operation, and the hernia recurred in October of the same year. When first seen in August of 1931 he had a left scrotal hernia the size of a turkey's egg. He had nineteen injections, the last on January 11th this year. At the end of February he gave up wearing his truss, except when shifting barrels before opening in the morning, and he goes the whole day through without a truss. Seen towards the end of April, 1932, he was without any hernia visible or palpable on standing and coughing. He is not included in the above series.

The above evidence, it is hoped, will suffice to convince the profession that the new method of treatment is worthy of thorough and impartial investigation. The opinion of the man who has never seen or heard of the treatment or who has attempted one or two cases half-heartedly and failed through faulty technique is of no value. It must be realized, however, that this is essentially a specialist treatment, and the man who only injects one or two cases a year can never learn an efficient technique.

I have to thank Mr. Stanford Cade for drawing my attention to the treatment, and the Librarian of the Royal Society of Medicine, the Manchester Medical Society, and Messrs. Parke, Davis and Co. for their help in obtaining literature on the subject.

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[3] Wolfe, Ralph: Ibid., 1931, cxxxiii, 243.
[4] Ibid., 1927, cxxv, 672.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

ANTI-STREPTOCOCCIC SERUM BY THE MOUTH

In streptococcal throats in children under 12 anti-streptococcic serum can be given by the mouth during the night at least three hours after any food. It should be given neat in a spoon, and no water after it. It seems to act locally on the throat, to have the same general effect as if given hypodermically, and there is no risk of any serum reaction. I saw the following striking case with Dr. Cawston of Lewes.

CASE I

A girl of 9 had been ill for nearly a fortnight with signs of acute endocarditis and pains and slight swelling in some joints. She had been given sodium salicylate in large doses at first, and later aspirin, but her condition had become worse and her temperature higher each day, reaching 103.8° the day I saw

her. She looked very ill; her pulse was 128. The apex beat was a good inch outside the nipple line. At the apex could be heard a short first sound, blowing systolic murmur, and a markedly reduplicated second sound, making a typical *bruit de galop*. Her tonsils were enlarged and inflamed, appearing streptococcal. She was given 10 c.cm. of anti-streptococcic serum by the mouth that night, and in each of the next nine nights. The highest temperature on the day after the first dose was 100.8°, after the second 100°, after the third 99.6°, after the fourth 98.8°, while the pulse had come down to 96, with marked improvement in the child's condition. The endocarditis, of course, took a long time to subside, but the temperature never again rose above 99°.

CASE II

Another case, seen with Dr. F. Gordon Watson, was one of acute nephritis in a boy of 10, who had had chocolate haematuria and scanty urine for a fortnight. His throat looked streptococcal. Ten c.cm. of anti-streptococcic serum was administered by the mouth each night; after two days the haematuria ceased, and the child's condition improved. The serum was continued for a week and the boy made a slow but good recovery.

WALTER BROADBENT, M.D., F.R.C.P.,
Senior Physician, Royal Sussex County Hospital, Brighton.

Reports of Societies

THE PRESENT POSITION OF TREATMENT IN INFECTIVE DISEASES

SIR THOMAS HORDER'S CAVENDISH LECTURE

At a special meeting of the West London Medico-Chirurgical Society, held at Kensington Town Hall on June 24th, with Dr. H. H. MILLS in the chair, the annual Cavendish Lecture was delivered by Sir THOMAS HORDER, Bt., whose subject was the present position of treatment in infective diseases.

Sir Thomas Horder said that there was no field of therapeutics in which greater differences of opinion and of practice existed than in that of diseases due to microbic infection. He first sketched the history of treatment of these diseases, reminding his audience that forty years ago there was no such thing as immunotherapy, except, of course, for the daring pioneer introduction of Jenner. That extraordinary but very isolated leap which preventive medicine took as the result of the empirical observation of an English country doctor stood as a solitary example of the principle of immunization for very many years. Infective diseases other than small-pox had continued for long to be treated on general or non-specific lines. The first attempt to deal with these diseases in more radical fashion took the form of what was now called chemotherapy, in which such means as carbolic acid were crudely employed. Afterwards came an epoch-making advance with the isolation of the toxin of diphtheria and the introduction of an antitoxin. Hope had run high that along this line of passive immunization effective remedies would be found quite soon for many other microbic diseases, but the hope had proved to be greatly deferred. The knowledge that in tetanus, as in diphtheria, the symptoms of the disease were due to an intoxication of the body by poisons produced by the bacillus at the local site led to the preparation of a tetanus antitoxin, and this proved to be of considerable prophylactic value, though its curative value was slight. With regard to pyogenic infections in general, in septicaemia, pneumonia, typhoid fever, and many other infective diseases, the problem was found to be much more difficult than in diphtheria and tetanus, but in a fitful way such remedies continued to be used. When the principle of active immunization was introduced by Wright, hopes were raised once more, especially as it was announced that there was a method of almost mathematical accuracy whereby this new system of therapeusis could be controlled—namely, by the opsonic index; but in the course of years this new enthusiasm had gradually waned, and the opsonic index became discredited. Tracing further the progress of chemotherapy, Sir Thomas Horder mentioned mercurochrome as probably the nearest approach to an ideal blood antiseptic so far discovered, also the value of emetine in amoebic dysentery, and tartar emetic in kala-azar; but it was clear that microbes of the bacterial order were much more resistant to germicidal agents than were those of the protozoal order, also that the action of the salts of heavy metals, probably of mercury itself, was not direct upon the infecting organism, but indirect through the tissues. Time and custom, Sir Thomas Horder proceeded, were the tests of all things, remedies amongst them. No fear need be felt lest a good thing by way of remedy for disease should go begging. A medicine which "delivered the goods" and was of real benefit to humanity could not fail of due recognition. Like good wine, good medicine needed no bush. "If anything could stir a doubt in my mind that certain pills are worth a guinea a box, it would be the blatant affirmation of the fact mile by mile all the way from London to Reading." So great was the desire for life on the part of patients and their friends, and so keen was the medical man to effect a cure, that the customary practice of the average doctor might be trusted to reflect broadly—or even narrowly—the merits or demerits of any therapeutic measure before it had been available for a couple of years.

Active and Passive Immunization

Sir Thomas Horder then dealt more particularly with active immunization by antigen inoculation and passive immunization by the administration of immune serums. In both respects some disappointment was felt, though at the same time it was unlikely that the last word had been said as regards either type of remedy. In antigen therapy the method of Besredka, whereby the antigenic principle was brought into actual contact with the tissues affected, had not yet received actual trial, at least in this country; even if the claims made by the author and some of his school were not entirely justified, at least the method deserved full exploration. It meant that in skin lesions the antigen should be applied externally in lotions and dressings; that in lesions of the alimentary tract it should be administered by the mouth, and in urinary tract infections by means of bladder irrigation or possibly by injection into the pelvis of the kidney. The lecturer discussed various directions in which immunized serums might prove serviceable, especially the direction of univalency. He referred to the work done recently on measles in the use of a serum from human convalescents. Here the method of election in attacking the serious problem of measles was what might be termed "sero-attenuation." The use of serum from convalescents had also been applied in somewhat sporadic fashion in poliomyelitis and encephalitis, but as so little was known of the incubation period, and nothing at all of susceptibility, the experience in measles could hardly be expected to be repeated in this field. Although epidemics of encephalitis had been in abeyance during recent years, the fact that sporadic cases were rarely wanting, as well as the very distressing nature of the disease and its pathetic residues, made some sort of prophylactic treatment very desirable. So far, however, the problem of attenuation had remained unsolved. Should encephalitis again become endemic some sort of mobilization of serum from convalescents on the lines

already suggested for measles would be very important. More hope for immunotherapy lay, perhaps, in bacteriophage, which might provide a very powerful weapon in the fight against infection. The more complex the life-history of disease-producing organisms, the more difficult became the problems of immunology, but against that was the probability that there was a larger field in which ultimately to achieve something fresh by way of specific therapy.

Remedies and the Physician

In the long pause which had now ensued after a series of successes in the treatment of microbic infections it was not surprising that other and empirical preparations should enter the field in considerable numbers, each attracting its band of enthusiasts. The extent to which a medical man used the class of reputed remedies he had in mind would depend very much upon his imagination, temperament, and view of life. If he were himself a patient he would like to think that his doctor, though fully aware of the elasticity and interaction of what was going on inside him, was very jealous of any disturbance of that interaction except in the direction of a more stable equilibrium; the virtue which he as a patient would feel most concerned that his doctor should possess was the virtue of forbearance. He would ask of his doctor a clear head, an observant eye, and an ability to act promptly and with courage on occasion—and then he thought he would be already in a fair way to recovery as the mere result of knowing that he was in the hands of such a physician. If this doctor told him he was likely to be helped by protein shock or S.U.P. 36 he would yield himself up quite readily; but the interesting thing was that a doctor of the type he had outlined rarely seemed to employ these remedies, while not condemning those who did. There was no more common fallacy than the statement, "If it does him no good, it will do him no harm," for there was no remedy powerful for good which was not capable of harm. The question was, "How much harm can I afford to incur in this experiment in helping the patient?" If the answer was "None," the remedy under consideration must be left out of the programme. But another pertinent question was, "Am I doing all I can on natural lines to help him in this trouble for which nature has provided an elaborate method of defence?" Fresh air, food, water, sleep, elimination—of these certainly it could be said that they would do no harm, and with equal certainty that they would do good.

In conclusion, Sir Thomas Horder said that he did not think the present painful pause in therapeutic advance would persist. On the contrary, he felt quite confident that it would be broken by brilliant advances in the direction of greatly improved methods in the near future. He doubted, however, whether a panacea would be found. The things essential to advance were toil, some humility, and imagination. From what part of the scientific horizon the light would come it was not possible to say; the sky must be scanned in every quarter. Perhaps some promising direction had been overlooked. Had the physicist, or the chemist, or the biologist, perchance, something with which he could help them? Or would the lamp again be lighted by that strange and inexplicable flash of genius, the genius which scouted all science because it was itself the mother of science, the genius which before had lit the path of preventive medicine and made the name of Edward Jenner immortal?

Professor Eiselsberg of Vienna has been elected president of the next Congress of the International Society of Surgery, which will be held at Cairo in 1935, when the surgery of the parathyroid glands, lumbar sympathetic, and colon (apart from cancer) will be discussed.

Reviews

TUBERCULOSIS OF BONES AND JOINTS

Dr. ETIENNE SORREL and Madame SORREL-DEJERINE have signalized the close of their long residence at the Maritime Hospital of Berck-sur-Mer in a suitably emphatic manner by the publication of a most imposing quarto volume, in which is embodied the record of their experience. A glance at the handsome binding and gilt top edge is enough to show that this is meant for no ephemeral existence in surgeons' libraries.

Tuberculose Osseuse et Ostéo-Articulaire[1] is based on the demonstrations and discourses delivered biennially at Berck to surgeons of all nations, most of whom were themselves specialists, and therefore formed a critical audience. The field of clinical study available was a vast one, for the hospital included 1,500 beds, mostly for children. As patients stay in the hospital throughout the whole course of their disease, the clinical studies are far more complete than is possible in a general hospital, for the sojourn is more often measured in years than in months. During the years 1920 to 1930 more than 10,000 case registers have been at the authors' disposal, and form the material on which this study is based. The personal nature of this experience is responsible for a tendency, which Dr. Sorrel acknowledges, to lay stress, perhaps unduly, on those aspects of the question which have most interested him. Such, for instance, are certain opinions recently acquired by the help of radiography on the cyclic evolution of tubercle of bones and joints, theories so rich in practical results, and nevertheless, according to Dr. Sorrel, generally ignored; also the whole subject of Pott's paraplegia, on which Madame Sorrel-Dejerine has done much work. Moreover, there is the differential diagnosis between painful vertebral epiphysitis and Pott's disease, to which the joint authors, together with Dr. Delahaye, have striven to draw attention. Other subjects of special interest are the evolution of white swelling of the wrist in infants and the treatment of Pott's disease and coxalgia with bone grafts as a means of fixation and of tibio-tarsal white swelling by astragalectomy, etc. All this explains, according to Dr. Sorrel, the rather unusual form of this book and the unequal development of certain chapters. He disclaims any attempt to write a systematic treatise, and states his intention to publish only personal experiences.

The work is divided as follows: tuberculous osteitis of the short bones, and next of the long and the flat bones, then osteo-arthritis of the upper and lower extremities, and lastly vertebral disease. As to frequency, in Paris—which forms the chief source of the cases at Berck—the number of cases is diminishing as well as their gravity. If no great stress is laid upon aetiology and pathology it is not because the importance of those subjects is ignored, but because they offer too wide a field. The authors are more concerned to show changes made manifest during life by radiography than those revealed by the microscope or the scalpel of the morbid anatomist in the post-mortem room. They direct attention also to trophic lesions of the long bones at a distance from the active tuberculous foci, which are especially important in children. While they have largely relied upon general hygienic treatment and sunshine and sea air, they have found serums and vaccines as yet of little practical value. The principles set forth in the introduction will have prepared the reader for the methods pursued. Each region is dealt with under headings of aetiology, frequency, pathological anatomy,

[1] *Tuberculose Osseuse et Ostéo-Articulaire.* Par Etienne Sorrel et Mme Sorrel-Dejerine. Paris: Masson et Cie. 1932. (Pp. viii + 514. Bound, 380 fr. the two volumes for abroad.)

symptomatology, diagnosis, treatment, and operative technique. This last heading includes an illustrated description of the proceedings approved by the authors, but not any wide survey of the methods employed by other surgeons or in other countries.

The fact that 514 pages of this book are illustrated by 640 figures, most of them reproductions of radiographs, speaks for itself. There is here a wealth of pathological and clinical material. A particularly valuable feature is the presentation of several radiographs of the same case at various stages in the course of the disease. In this manner, instead of studying museum specimens, we are able, as it were, to watch the clinical progress of cases and learn the pathology of the living as it was observed at the bedside. It may be safely assumed that the cases dealt with at Berck are on the whole graver and more acute than those seen in hospitals for bone and joint disease in Great Britain. From the prominence given to spina ventosa we may infer that localization of the tubercle bacillus is more often met with in France than in England. The figures given bear out this conclusion. Out of 4,660 children suffering from bone and joint tuberculosis, 649 had spina ventosa. Many of them had, however, multiple lesions. From other sources we may draw the conclusion that there is plenty of room for diminution of the frequency and gravity of surgical tuberculosis in France. We can hardly expect this great and weighty (11 lb.) tome to be acquired by many practitioners, but at least it should be a valuable consultant in all libraries.

FILTERABLE VIRUS DISEASES IN MAN

In the past the medical student or practitioner interested in filterable viruses has had to seek his information either in the brief accounts appended to bacteriological textbooks or in the numerous original papers devoted to this subject. And though, of late, comprehensive works on filterable viruses, such as volume vii of *A System of Bacteriology*, have made their appearance, there is still room for a small book giving a concise and up-to-date account of the subject. *Filterable Virus Diseases in Man*,[2] by Dr. J. FINE, is an attempt to supply this need, and though the author does not speak from a first-hand knowledge of filterable viruses, he has given us quite a good summary of the vast literature of the subject.

For convenience of presentation a classification of the diseases of man due to filterable viruses has been attempted, and although, as Dr. Fine himself admits, such a classification is open to criticism, it probably serves a useful purpose, and will do no harm as long as it is recognized to be provisional, and not necessarily scientific. There are two main divisions: (1) diseases transmitted by an intermediate host ; (2) diseases transmitted directly, the former being subdivided into the yellow fever group and the typhus group. In speaking of the similarities found in the three diseases—yellow fever, dengue, and sand-fly fever—constituting the yellow fever group, the author tells us that " neither immune bodies nor viricidal properties have been demonstrated in any member of the group," and yet in the preceding paragraph we read that " the serum of convalescents is capable of protecting against an injection of infective blood." It is difficult to understand how such a glaring contradiction could have been overlooked. The virus diseases transmitted directly are divided into four groups—the dermotropic, neurodermotropic, neurotropic, and respiratory. In the account of small-pox, which with herpes zoster and varicella form the neurodermotropic group, there is no mention of the work of Burgess, Craigie, and Tulloch on the diagnostic use of the flocculation test, and the Paschen bodies are not seriously considered as being the actual virus. This only emphasizes the difficulties inherent in writing a book on such a rapidly developing subject as filterable viruses, for it is now well established that the Paschen bodies are the virus. The same criticism applies to the section on disseminated sclerosis, where Chevassut's work is considered at length. There are two appendices ; in the first the main characters of filterable virus diseases of man are given in tabular form, while the second resumes the available knowledge of all virus diseases, including the bacteriophage.

There are some misstatements in this book. One of these has been referred to, another occurs on page 91, where we are told that perivascular demyelination is a constant feature of cerebral poliomyelitis, and some of the information in the first appendix concerning immunity is incorrect. These errors detract somewhat from an otherwise valuable little book.

[2] *Filterable Virus Diseases in Man.* By Joseph Fine, M.D., B.Sc., D.P.H.Glas., D.T.M.Liverpool. Edinburgh: E. and S. Livingstone. 1932. (Pp. 144. 6s. net.)

POSTURE

The reaction of many medical men to a work with a title such as *Posture*[3] would be a feeling of weariness at the prospect of reading descriptions of the distortions and mechanical adaptations occurring in scoliosis. But Dr. FRANK DICKSON'S book can be read with refreshment, unalloyed by that feeling of hopelessness which is so often inseparable from conditions demanding sustained and persevering effort on the part of both doctor and patient. The author approaches the subject from its evolutionary aspect, and regards his patient as a biped who was originally on " all fours." With this in mind, one realizes that the junction between the trunk and pelvic girdle is a region where enormous changes have taken place during man's gradual assumption of the erect attitude. Changes are still in progress and account for the frequent variations in structure and alignment which occur in malformed types. In the abdominal cavity, too, the changes have been considerable. Instead of resting securely on the ventral wall, viscera have become adapted to the upright position in which they partly rest one above another, and are partly suspended by ligaments and mesentery. These rearrangements are described, and diagrams illustrate the author's theories.

Variations from the normal are bound to occur. An unusually long suspensory ligament may fail to hold a viscus in its proper relation to other viscera ; adventitious bands may interfere with normal movement ; and variations in normal supporting structures may result in visceroptosis. However convincingly this may be discussed by Dr. Dickson, it is wise to remember that defects in posture are as often the result as the cause of ill-health. When disease and depression lower vitality, muscles lose tone, are quickly fatigued, and so cannot maintain the good posture that is indicative of health and happiness. The importance of recognizing incipient static defects in children, with a view to their early correction, is well understood by the author. Photographs of patients show how defects such as bow-legs, knock-knees, and flat feet alter the lines of stress so that the body weight falls on structures unadapted to bear it. Unfortunately these photographs, though they serve their purpose, have a weakness of definition as if both lighting and focus were at fault. Chapters on posture in relation to arthritis and spondylitis emphasize the need for combating auto-intoxication in these conditions. The problem of scoliosis is dealt with courageously, and foot deformities in adults

[3] *Posture.* By Frank D. Dickson, M.D. Everyday Practice Series. London: J. B. Lippincott Company. 1931. (Pp. xi + 213; 118 figures. 21s. net.)

are discussed from the prophylactic as well as from the palliative side.

The postural exercises for daily routine are excellent, and, if practised conscientiously, would be of much benefit. The directions are concise and simple, but the illustrations are disappointing, and devoid of inspiration. If it is the aim of the book to prove that good posture increases the health and beauty of the body, these illustrations are a sorry expression of that aim. Again, the camera is partly at fault, but so are the garments which muffle the figure of the blindfolded, black-stockinged model, making it appear distorted and unlovely. A simple swimming costume would allow unrestricted movement in performing the exercises, and would make wider appeal to a generation in love with the freedom of sun and air.

THE GLYCOSIDES

The treatise on the glucosides[4] by E. F. and K. F. ARMSTRONG is an important addition to the series of monographs on biochemistry. The term "glycosides" is used to denote all substances that yield a sugar on hydrolytic cleavage. So rapid has been the progress of investigation of such substances, particularly those of vegetable origin, that the present monograph may be regarded as but an interim report on the subject. The natural glycosides fall into groups defined by similarities in their non-saccharine radicles, and form groups such as the phenolic, the coumarin, and the anthocyanin series. The authors have adopted this arrangement for the scheme of discussion; it permits of detailed treatment with economy of space. Many glycosides, both natural and inventive, have been synthesized, and the field of such products has become much enlarged. The nucleosides have a peculiar interest as a group which includes glycosides of animal as well as of vegetable origin. The pectins and the uronic acids form an interesting series, which has been much neglected and which still awaits a penetrative research, notwithstanding the amount of useful work that has lately been accomplished. The function of the glycosides in plants is a subject which has engaged a good deal of attention on the part of biologists, and a section of the book is devoted to the biological aspect of the matter, including a chapter on the utilization of sugars in plants. The glycosides which exert physiological activity are summarized and described in some detail; and while chief consideration is given to those of digitalis, strophanthus, and others of pharmacological interest, those of subordinate importance are also accorded adequate attention. All these matters are ably discussed.

MOSQUITOS OF THE EAST INDIES

During the last ten years a number of excellent works have been published describing and figuring the species of mosquitos which occur in particular countries. The book by SWELLENGREBEL and RODENWALDT, describing the *Anopheles* mosquitos of the East Indies,[5] is an excellent example of this type of work. It is already familiar in previous editions which were published in the Dutch language. In its revised and enlarged form, in German, it contains an introduction to the subject which is written so that anyone with an elementary knowledge of mosquitos can make use of the more specialized and advanced parts of the book. The subsequent chapters deal mainly with the anatomy and distinctive characters of the numerous species of *Anopheles* found in this region. It is essential t have the systematic side of the question precisely worked out before other studies can be undertaken, for it is a matter of common knowledge that species which appear to resemble one another extremely closely are often widely different in biology and in ability to transmit malaria. But we take this opportunity of pointing out that this full and systematic account should only be regarded as a prelude to a detailed study of the biology of these insects in the field. It is not yet generally realized that, once an insect has been critically identified, the applied entomologist is no longer interested in its corpse. All the real problems of applied entomology centre round the activities of the living creature.

Another group of Dutch workers have produced a similar work on the mosquitos of the *Stegomyia* group.[6] They give a detailed account of all the species which occur in the Dutch East Indies, but they include relevant facts relating to the same species from other parts of the world. The book is well illustrated, in such a way that anyone with a slight knowledge of entomology would find it of value. The members of this group of mosquitos are of interest to medical men, particularly in relation to yellow fever—a disease which has never appeared in the Orient, but which would find the stage set for an enormous epidemic supposing the virus was transported thither. Some of the species of *Stegomyia* are also the probable vectors of filaria in Malaya and the Islands, but nothing is known for certain on that subject.

NOTES ON BOOKS

Once more we welcome a new edition of Sir NORMAN WALKER'S well-known *Introduction to Dermatology*.[7] For this, the ninth revision, he has had the benefit of the assistance of one of his junior colleagues, Dr. G. H. PERCIVAL, once his last house-physician and now assistant physician to the skin department of the Royal Infirmary, Edinburgh, over which Sir Norman Walker presided with such distinction for many years. This has long been one of the most popular textbooks of dermatology among both students and practitioners, and the present edition preserves the well-known characteristics of clear description, sound advice in regard to treatment, and raciness of expression. At the same time great pains have been taken to keep it up to date and to record all the real progress that has been made in the subject, without wasting space on the numerous theories and therapies continually put forward which fail to stand the test of experience. The present edition is a worthy successor to its forerunners, and will no doubt achieve an equal popularity.

Dr. PALUGYAY'S volume, *Einführung in die Röntgentherapie chirurgischer Erkrankungen*[8] (Introduction to the *X*-ray Treatment of Surgical Diseases), forms the eighteenth volume of a series of monographs on practical radiology. Among the conditions dealt with are actinomycosis, tuberculosis, and malignant and benign tumours. Although short, it is full of information, while a bibliography of the subject occupies twenty-four out of its hundred pages. This is an excellent book of reference on the subject of which it treats.

We welcome the appearance of the fourth edition of *A Manual of Pharmacology*,[9] by Professor T. SOLLMANN. This work is well known as being the largest and most complete manual on its subject in the English language.

[4] *The Glycosides.* By E. F. Armstrong, D.Sc., Ph.D., LL.D., F.R.S., and K. F. Armstrong, B.A., B.Sc. Monographs on Biochemistry. London and New York: Longmans, Green and Co. 1931. (Pp. vii + 123. 12s. 6d. net.)

[5] *Die Anophelen von Niederländish-Ostindien.* Von Professor Dr. N. H. Swellengrebel und Professor Dr. Ernst Rodenwaldt. Jena: G. Fischer. 1932. (Pp. viii + 242; 24 plates; 23 maps. RM.13; bound, RM.14.50.)

[6] *The Subgenus Stegomyia in Netherland India.* By J. Bonne-Wepster and S. L. Brug. Batavia: G. Kolff and Co. 1932. (Pp. 85; 22 figures. f.2.50.)

[7] *An Introduction to Dermatology.* By Norman Walker, Kt., M.D., LL.D., F.R.C.P., assisted by G. H. Percival, M.D., Ph.D., F.R.C.P. Ninth edition. Edinburgh: W. Green and Son, Ltd. 1932. (Pp. xix + 382; 92 figures, 100 plates. 20s. net.)

[8] *Einführung in die Röntgentherapie chirurgischer Erkrankungen,* Von Privatdozent Dr. Josef Palugyay. Radiologische Praktika, Band xviii. Leipzig: G. Thieme. 1931. (Pp. 103. M.10.)

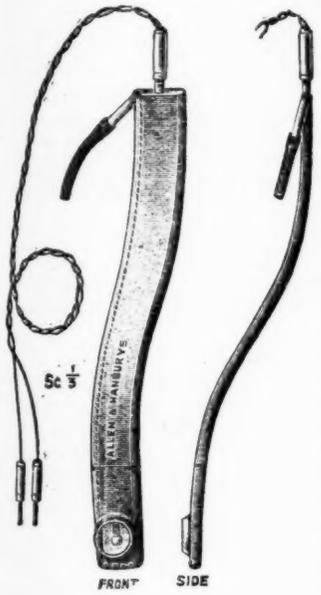
[9] *A Manual of Pharmacology.* By Torald Sollmann, M.D. Fourth edition, thoroughly revised. Philadelphia and London: W. B. Saunders Company. 1932. (Pp. 1,237; 22 figures. 37s. 6d. net.)

The third edition appeared as recently as 1928, and the general form of the volume has not been altered, but its size has been increased by some fifty pages. The present revision has been restricted chiefly to fields in which there have been important recent advances. Some of the more interesting of the new subjects treated are the new barbituric hypnotics, iodine compounds in radiography, the action of liver extract and copper in anaemia, plasmoquine, and the sex hormones. The revision has been carefully carried out, and the book continues as heretofore to provide an excellent and up-to-date work of reference.

PREPARATIONS AND APPLIANCES

ILLUMINATING RETRACTOR AND SUCTION TUBE

Mr. L. BATHE RAWLING, F.R.C.S. (London, W.1), writes: Messrs. Allen and Hanburys have succeeded in complying with my request, and that of Mr. Wakeley, to make a really useful illuminating retractor, combining the advantages of illumination plus retraction plus suction. The handle is curved, allowing of a good grip, and the lamp is enclosed within the head of the retractor, shining direct on the region required, whilst the head of the retractor is detachable, permitting of the ready insertion of a fresh lamp as required.

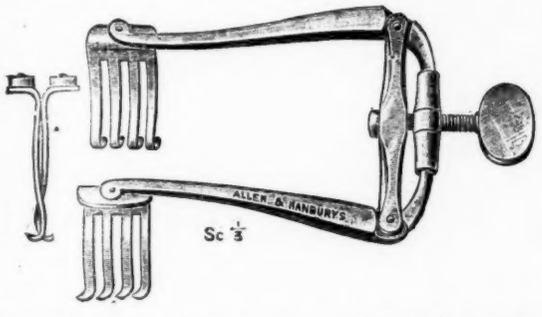


A rheostat with Ever Ready batteries, voltage up to 4 volts, is connected with the retractor by a flex of 3½ yards; retractor and flex are sterilized by boiling. A sucker runs along one side of the retractor, so that illumination and suction are combined.

The apparatus has proved its efficiency in brain surgery, more especially in the exploration of pituitary and cerebello-pontine angle tumours, and in deep dissection of the supraclavicular region for cervical rib, sympathectomy, etc., but is also equally advantageous in those regions where limitation of exposure and the anatomy of the part demand clear illumination and suction.

A SELF-RETAINING RETRACTOR FOR PERINEAL EXPOSURE OF PROSTATE

Mr. H. P. WINSBURY-WHITE, F.R.C.S. (London, W.1), writes: The instrument shown in the accompanying illustration is placed in position as soon as the prostate is reached by dissection. By turning the screw at the base the blades, which are mounted on swivels, are swung outwards. They

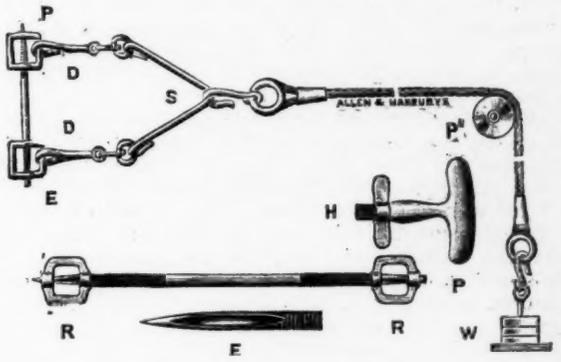


are so constructed that they are completely self-retaining as soon as sufficient lateral tension is attained. The assistant's hands are thus free to apply retractors to the anterior and posterior parts of the operation field. In this way an excellent view of the whole of the under surface of the prostate is obtained. The instrument is made by Allen and Hanburys, Ltd., 48, Wigmore Street, London, W.1.

EXTENSION OR TRACTION PIN FOR TREATMENT OF FRACTURES, ETC.

Mr. B. WHITCHURCH HOWELL, F.R.C.S. (London, W.), writes: The following is a brief description of an extension pin evolved by me some three years ago primarily for the treatment of fractures of the long bones of the lower limb. The illustration shows the details of the pin, and the simplicity of the complete traction or weight or tie-on apparatus, the manufacture of which has been carried out by Messrs. Allen and Hanburys, 48, Wigmore Street, W.1.

The bone, generally the os calcis, is transfixed under local or general anaesthesia with the pin, E P, making use of the handle, H, to do so. To each end of the pin is spun a rectangular spinner, R, one of which shields the sharp point, E. To each spinner is attached a dog-collar clip, D. Should weight extension be needed, then the system S W is attached, working over a pulley, P″, which pulley may be incorporated in the end of the Thomas splint or at the end of a Pearson fracture bed. This system consists of a spreader, S, a steel hawser of great strength, and a weight, W, available in multiples of 5 lb. Should a tie-on extension be needed, then cords are tied to the dog-collar clips, D, and thence to the end of the Thomas splint.



The advantages claimed are the following: (1) The pin can be inserted so as to control abduction, adduction, or rotation deformities, etc. (2) Enormous traction can be obtained, with no ill effects. (3) In a certain number of recent fractures, especially of the tibia and fibula, complete reduction can be obtained immediately if the traction pin be used in conjunction with a traction apparatus applied to the orthopaedic operation table evolved by me and described in the *British Medical Journal* of October 19th, 1929. In fact, in a large percentage of these cases it is possible to apply a plaster cast at once, and remove the pin before the patient is returned to bed. (4) In addition to its application to work on fractures, I have used it to lengthen the femur, to reduce dislocations of the hip and knee, after osteotomy for malunion of fractures and ankylosis of the hip in malposition, and after arthroplasty of the hip and knee. (5) Further, it is simple to use, portable, and easily sterilized, and local anaesthesia may be employed.

URINARY SUGAR ESTIMATION

We have received a specimen, from Messrs. H. R. Napp, Ltd. (3 and 4, Clements Inn, London, W.C.2), of the "glucator," a simple apparatus which enables rapid and accurate quantitative estimation of urinary sugar to be carried out. It depends upon a colorimetric examination of a mixture of urine and a special reagent. The reagent is poured into a test tube up to a 2 c.cm. mark, and boiled. Urine is then added from a pipette, drop by drop, and the mixture boiled again. This is continued until the requisite number of drops of urine have changed the colour of the mixture from blue to a pale yellow. By reference to a table and by the use of a simple calculation, the amount of sugar passed in the twenty-four hours can easily be calculated. The apparatus, which consists of a bottle of reagent, a pipette, two test tubes (with holder), and a small tube containing disks of rubber to prevent splashing during boiling, is neatly packed in a cardboard box, 6 by 3½ by 1½ in., and is sold at 10s. 6d. The reagent costs 4s. 6d. for 30 c.cm.

INTERNATIONAL VITAMIN STANDARDS

We have received for publication the following statement, which has been prepared with the object of making known to all those interested that the international standards for the vitamins A, B_1, and D, recently adopted by the Health Organization of the League of Nations, are now available for research workers, laboratories, and institutions in Great Britain and Ireland.

In June of last year, under the auspices of the Permanent Commission on Biological Standardization of the Health Organization of the League of Nations, a conference of experts was held in London with the object of discussing the possibility of adopting standards and defining units for certain of the vitamins. As a result of their deliberations the conference made a series of important recommendations to the Permanent Standards Commission, and these are set out in the Report (No. C.H. 1055 (1)) recently published from Geneva. Briefly, the conference recommended the adoption of a standard, and the definition of a unit in terms of such standard, for the four vitamins A, B_1, C, and D. The conference further recommended that in the case of the two vitamins A and D the final preparation of the standard should be undertaken by the National Institute for Medical Research, Hampstead, and that the standard for vitamin B_1 should be prepared in Java. The National Institute at Hampstead was further nominated to act, on behalf of the Health Organization of the League of Nations, as the central laboratory for the storage and distribution of the three standard preparations for vitamins A, B_1, and D. In the case of vitamins A, C, and D, it was recommended that the proposed standards and units should be adopted for a period of two years in the first instance, the standard for vitamin B_1 being given a preliminary currency of five years. In the case of vitamin C no preparation or storage of a stable standard was involved by the recommendation of the conference, which was satisfied, for this vitamin, to recommend the use of fresh lemon juice as a standard, and to define the unit as the antiscorbutic activity of 0.1 c.cm. of the juice, prepared according to a simple method described in the report.

VITAMIN A

Carotene was recommended as the international standard for vitamin A, and the unit was defined as the vitamin A activity of 1 γ (0.001 mg.) of the standard preparation of carotene. Eight laboratories have contributed varying quantities of carotene, and these have been mixed at the National Institute for Medical Research; the mixed carotene has been purified by recrystallization until the melting point was above 179° C. The highly purified preparation has been distributed in 10 mg. quantities into small ampoules in an atmosphere of pure nitrogen, reduced to dryness, and the ampoules sealed.

VITAMIN D

With regard to the international standard for vitamin D, the conference recommended that the standard solution of irradiated ergosterol, which has been issued from the National Institute for Medical Research, Hampstead, for the past two years (*British Medical Journal*, August 30th, 1930, p. 331), should be adopted as the international standard. On account of the fact that this standard preparation had been intended, primarily, for the needs of this country alone, it was considered desirable to prepare a larger quantity to meet the needs of other interested countries—nineteen in all—for a period of some years. Accordingly, a second and larger quantity of irradiated ergosterol has been prepared at the National Institute for Medical Research, and this has been assayed in terms of the original standard preparation. The comparative examination of the new and the original standard preparations has been carried out by eight different laboratories in five different countries, and these eight groups of workers are unanimous in agreeing that the new standard now available is exactly equivalent to the original standard. There is, accordingly, now available an adequate amount of this standard preparation of vitamin D to meet the requirements of all workers throughout the world for some years to come. The unit recommended for international use is defined as the vitamin D activity of 1 mg. of the international standard solution of irradiated ergosterol.

VITAMIN B_1

The standard for vitamin B_1 recommended for international adoption is a concentrated preparation of the antineuritic vitamin B_1, adsorbed on kaolin. The standard has been prepared in the Medical Laboratory, Batavia, Java, and is stored at the National Institute for Medical Research, Hampstead, from which it will be distributed. The international unit has been defined as the antineuritic activity of 10 mg. of the international standard preparation. The standard preparation is very stable, and, provided it is protected from moisture, appears to retain its activity unchanged.

In the case of other countries, arrangements have been made to send suitable supplies of each of the above standards to approved national institutions for local distribution. Institutions or individual investigators in Great Britain and Ireland who wish to obtain supplies of one or more of these standards should apply to the Department of Biological Standards, National Institute for Medical Research, N.W.3, from which issues will be made at regular intervals.

ROCKEFELLER MEDICAL FELLOWSHIPS

The Medical Research Council announces that, on behalf of the Rockefeller Foundation, it has made the following awards of travelling Fellowships for the academic year 1932–3. These Fellowships are awarded to graduates who have had some training in research work either in the primary sciences of medicine or in clinical medicine or surgery, and who are likely to profit by a period of work at a chosen centre in America or, in special cases, in Europe, before taking up positions for higher teaching or research in the British Isles. In view of the high qualifications of so many of the candidates on this occasion the Council greatly regrets that it has not been possible to make a larger number of awards.

COLIN PANTON BEATTIE, M.B.Ed., D.P.H., Bacteriology Department, Edinburgh University.

WILLIAM DONALD WYKEHAM BROOKS, B.M.Oxon., M.R.C.P., St. Mary's Hospital, London.

ELEANOR MILDRED CREAK, M.D.Lond., M.R.C.P., Maudsley Hospital, London.

IAN GEORGE WILSON HILL, M.B.Ed., M.R.C.P.Ed., Royal Infirmary, Edinburgh.

WILLIAM ARTHUR MACKEY, M.B.Glas., Department of Surgery, Glasgow University.

DAVID JAMES MACMYN, M.B.Cantab., King's College Hospital, London.

JOHN CHASSAR MOIR, M.D.Ed., F.R.C.S.Ed., University College Hospital, London.

Dr. Brooks and Mr. MacMyn have been appointed on modified conditions while receiving emoluments from other sources.

The returns from universities and university colleges in receipt of Treasury grants for the academic year 1930-1 has been issued by the University Grants Committee (H.M. Stationery Office, 1s. 3d.). Of the full-time students to which this publication relates, medicine and dentistry claim 9,889 (20.8 per cent.); of these 8,702 were men and 1,187 women. During the period under review figures for Guy's Hospital Medical School and the London School of Pharmacy were included for the first time, and allowance has to be made for this in drawing comparisons with earlier years. The schedule of degrees and diplomas obtained during the year and analysed according to faculties gives a total of 1,025 degrees and 1,170 diplomas under "Medicine including dentistry" in Great Britain.

British Medical Journal

SATURDAY, JULY 2nd, 1932

RUPTURE OF THE SPLEEN

The changes in the incidence of disease which occur with the passage of time, and the alterations which advancing civilization produces in the life and social history of the individual, are always of interest to the student, often of value to the investigator, and sometimes a guide to the prophet. While this is especially true of disease having a pathological origin, it may escape attention that the incidence of that due to injury is undergoing a similar change. The increasing number of motor car accidents, the adoption of tall steel-framed buildings (with their special hazards to the erectors), the introduction of the aeroplane, and the greater interest in the more active sports, are all changing the relative frequency with which certain injuries are sustained, and in no region does this apply with greater effect than the abdomen. Thirty years ago, for instance, rupture of the spleen was of comparatively rare occurrence, whereas the latest figures show that it is now a relatively common accompaniment of abdominal injury. Schmidt in Germany finds that this injury is now fifteen times as frequent as it was in 1913, and states that whereas in the interval 1913–26 he saw a little over an average of two cases a year he now observes yearly about thirty-six. In all abdominal injuries the incidence of rupture of the spleen is variously given as 15 to 25 per cent. ; these numbers are sufficiently high to merit an enhanced interest in the subject in the future. R. Morwa, in the *Revue de Chirurgie* for February of this year, has statistically analysed some 100 cases collected from fairly recent records ; although his article is chiefly concerned with emphasizing the frequency with which there is a latent period in the symptomatology, there are many other points of interest. Thus, whereas formerly a kick from a horse was the commonest cause, he now finds that falls from a height account for 40 per cent., motor car accidents for 20 per cent., and violent sports for 15 per cent. As might therefore be expected, a high percentage of cases (88) occurs in males, while the age curve shows two maxima at 18 to 20 and at about 35, the latter increase being associated with the pre-existence of some pathological enlargement. The youngest patient was 4 years and the oldest 65 years. The injury was usually inflicted over the splenic area—occasionally, however, even over the right hypochondrium. The primary bleeding may be intrasplenic or subcapsular ; in the former type, if small, resolution with the formation of a cicatrix may follow, but in other cases the bleeding continues and becomes encysted (*kystes métatraumatiques de Camus*)—these may later increase and form a "tumour" of the spleen calling for splenectomy. In more violent injuries the blood reaches the periphery, and then forms one type of subcapsular haemorrhage. In some of the latter cases the capsule is immediately ruptured and a localized perisplenic haematoma forms ; the completeness of this localization will to some extent depend upon the previous presence of adhesions. There appears to be no seat of election for rupture, which can occur in any position on the splenic surface or in its substance.

In the symptomatology there are three distinct periods: (1) the stage immediately following the injury ; (2) the period of latency, more or less prolonged ; and (3) the stage of rapid bleeding into the peritoneal cavity. In the first period, following the reflex sympathetic shock and syncope associated with any severe abdominal injury, there is often a secondary syncope which supervenes after a short interval, perhaps of a few minutes only—this is regarded by Quénu as symptomatic of splenic rupture in a case where the injury has been in this region, and is thought to be due to the reactionary bleeding which follows the initial shock. This rather characteristic sequence occurred in 25 per cent. of the collected cases, and was possibly present, but not noted, in many others. The commonest symptom is pain, and this is of especial importance if it persists and tends to become worse ; it is often the only sign to be detected in the latent period. Phrenic pain referred to the left shoulder was recorded in only 3 per cent. of the cases, though it has been considered by some observers to be of extreme diagnostic importance ; it was probably present in a much larger number of cases, but was not inquired for or observed. This deduction can be made with some confidence, since in cases of perforation of an ulcer, where the phrenic pain is very commonly present, a search of the records shows that it has been noted in but a small percentage of the cases, and, indeed, owing to the overwhelming intensity of the abdominal pain, is often admitted by the patient only when the operation is over and the major pain relieved. Tenderness in splenic rupture is not well marked, and rigidity by no means constant. The pulse rate is increased and usually remains so ; the temperature after the initial fall is also slightly raised. It is extremely important to realize that in 34 per cent. of the cases none of the above symptoms was present, an observation which should make every surgeon cautious in his prognosis.

Morwa emphasizes the need for recognition of the latent period as a fundamental point in the symptomatology of abdominal injuries where rupture of a viscus appears possible—an opinion that will be endorsed by every surgeon with experience of this type of injury. In 66 per cent. of the cases under review the patient was apparently normal again within twenty-four hours, and in 34 per cent. he had actually returned to his work for several days before the catastrophe of violent intra-abdominal bleeding happened. This latent period lasted on an average six days, but quite a large number occurred within the first twenty-four hours. In 54 per cent. of the cases the latent period was associated with no abnormal symptoms or signs, but in the others there were a few indications that all was not well.

In view of the importance of their recognition these deserve attention: slight pain and tenderness in the left flank, occasional left shoulder pain, slight muscular guarding, local tumefaction, and a low degree of pyrexia. According to Quénu, with careful examination it is always possible in this stage to detect slight tenderness and rigidity in the splenic area, and small oscillations of temperature. With the onset of rapid intraperitoneal bleeding the signs and symptoms become marked, and are too well known to need mention.

The treatment adopted by the majority of surgeons is splenectomy, but it is of interest to observe that in 15 of 160 cases plugging with a tampon was alone employed, and that the mortality of these was 13 per cent. as compared with 37 per cent. for splenectomy. As Quénu remarks, however, "How is it possible to bring about effective tamponment of an organ as mobile as the spleen unless the whole of the left hypochondrium be packed, with all the attendant risks of infection, adhesions, and herniation?" In the few cases in which suture was attempted there was a mortality of 50 per cent. There can be little doubt, therefore, that the small mortality figure for tamponment gives a false impression, and is probably accounted for by the fact that the cases so treated were of very slight rupture, for which the operator thought splenectomy scarcely necessary. The operation of choice is splenectomy combined usually with one or more blood transfusions. Associated lesions of other organs must be anticipated, and always add much to the risk of operation. Lesions of other viscera may be mistaken for delayed splenic bleeding, as in two recent cases (unrecorded), where a rupture of the tail of the pancreas, followed by the formation of a pseudocyst in the splenic area, produced a train of symptoms not unlike that of splenic rupture. In the second of these the diagnosis was accurately made before operation by an estimation of the diastatic index of the urine. Such mistakes in diagnosis, however, are obviously of less importance than a failure to recognize the possibilities in the earlier stages, and especially during the latent period.

VASOVAGAL SYNCOPE

It is unfortunate that in the present state of medical knowledge diagnosis must at times depend solely upon the history. Angina pectoris is a case in point, for here the correct assessment must hang upon the slender and often unreliable thread of the patient's story. Still more difficult is the case of the sufferer who, presenting no signs, is further negative in that he is not even the witness of his own malady. A syndrome which is hedged about by these peculiar diagnostic difficulties is the common fainting attack. The patient is able to give but a meagre account of his symptoms, and he is usually ignorant of the duration of his attack, while the observations of witnesses, if any, are rendered more than usually unsound by surprise and alarm. The diagnostic problem is further obscured, since the causes of syncopal attacks are numerous, while the importance of the diagnosis is enhanced by the fact that, unlike the common faint, some seizures are far from benign.

There can be no physician of experience who has not at times been in serious doubt over cases of this type, and the recent contribution by Sir Thomas Lewis[1] to our knowledge of the fainting attack therefore provides not only a lucid exposition of the subject, but a valuable guide to clinicians in every type of practice. While the common clinical associations of the disorder in civilian life are poor general health, fasting, fatigue, and unhygienic environment, fainting may occur in the healthy and even robust individual as a result of shock or emotional stress, the element of surprise generally being an important factor. Syncope is the outstanding feature in the attack: dimness of vision and giddiness, and a sinking sensation or other abdominal symptoms such as nausea and retching are common. Sir Thomas Lewis mentions the following important points in differential diagnosis: the fact that no sense of rotation accompanies the giddiness distinguishes these attacks from auditory vertigo; they rarely occur while the patient is recumbent, in contrast with major attacks of cardiac syncope; the tongue is not bitten, nor is urine passed, although in severe seizures mild clonic movements of the face, arm, and trunk may occur. Progressive lowering of the blood pressure is characteristic, while the pulse slows to forty or fewer beats per minute, and may become imperceptible. Pallor, clammy sweat on the face and elsewhere, and sighing respirations are usual. Recovery is invariable.

The key to an understanding of these phenomena is in the action of atropine. This drug accelerates the slow heart, thus showing the bradycardia to be of vagal origin; but there is no concomitant increase in blood pressure, nor does atropine relieve the attack. Sir Thomas Lewis argues from these facts that the cause of the syncope is mainly vasomotor, the vagal effects—bradycardia and gastric manifestations—being subsidiary, though striking. In seeking the mechanism underlying the attacks, which may be appropriately labelled vasovagal syncope, he refers to the carotid sinus reflex first described nine years ago by Hering,[2] who showed that light pressure upon the carotid sheath at the bifurcation of the artery, and increased tension in the carotid sinus, cause a reduction of heart rate and systemic blood pressure. The carotid sinus reflex thus has its receptor element in the carotid sheath, an afferent path in the glossopharyngeal nerve, and a cell station in the medulla. The discharge provoked through efferent paths results in slowing of the heart and reduction in vasomotor tone. Sir Thomas Lewis advances the view that in the clinical syndrome of vasovagal syncope the central (medullary) and efferent parts of the carotid sinus reflex mechanism are disturbed. In support of this view he adduces the observations of Waller, who found that pressure upon the carotid in man gives rise to nausea and increased movements of the alimentary tract, while respiratory distress may also

[1] *British Medical Journal*, May 14th, 1932.
[2] Quoted by Lewis.

occur—these phenomena being likewise common in vasovagal syncope.

Twenty-five years ago, when the nature of the common fainting attack was little understood, and clinical phenomena of seizures were generally even less fully recorded than they are now, Gowers described a syndrome occurring among women whose family history frequently included evidence of epilepsy, insanity, or other mental taint. The attacks were recorded as being mainly sensory and subjective in their manifestations, predominant among these being paraesthesiae in the limbs, respiratory and precordial distress, palpitation, and mental anguish. Ryle[1] has recently mentioned further details of these attacks, and has recorded slowing of the pulse to 30 or 40, accompanied by sensations of "floating away" or "fading away." Whatever may be the underlying mechanism, they are not ordinarily difficult to differentiate from the common fainting attack. Gowers was unfortunate in choosing the term "vasovagal" to denote the syndrome described by him, since ordinary fainting appears to have a stronger claim to this title.

Sir Thomas Lewis remarks upon the insufficient data often obtained in the study of syncopal attacks. He urges the fuller study of vasovagal syncope, Gowers's syndrome, and allied phenomena, especially the exact registration of pulse rate and blood pressure changes in association with symptoms. It might be added that in all these syndromes there is so close a relation between cardiovascular and neurological elements that the neglect of either must result in an incomplete knowledge of these peculiar clinical phenomena. The work already achieved by Sir Thomas Lewis has not only served the purpose of clarifying modern conceptions of a familiar form of syncope, but has supplied a stimulus that should direct into profitable channels the researches of the future.

THE LISTER INSTITUTE

The work of the Lister Institute, summarized in the annual report for 1932,[2] covers a wide field, and we can do no more than comment on such aspects of it as have a bearing on practical medicine. Research on vitamins, carried out in connexion with the International Conference on Vitamin Standards and Units, has been concentrated on the biological assay of these substances. This way of estimating physiological products has obvious limitations in comparison with the more exact measures of chemistry and physics, and it is possible that the method of chemical analysis by photo-chemistry and spectroscopy devised by Drs. F. P. Bowden and C. P. Snow—commented on in the *Journal* of May 21st—may in the future be applied in the standardization of vitamins. In a further investigation into the distribution of vitamins B_1 and B_2 in natural foodstuffs, Miss Roscoe and Miss Graetz found that oranges were a good source of vitamin B_1, tomatoes less good, and bananas and apples relatively poor. Their previous observations showed that watercress, lettuce, spinach, and cabbage are rich sources of B_1. The vitamin B_2 content of these foodstuffs is definitely lower than the B_1 content. In rats suffering from deficiency of the anti-neuritic vitamin B death occurs shortly after the onset of the characteristic convulsive muscular spasms. While these can be quickly cleared up by administration of the missing vitamin, they can also be temporarily relieved by injection of parathyroid extract. Blood examination, however, revealed no abnormality of the calcium content in these cases. Dr. Zilva, in conjunction with Dr. S. Smith and Mr. Grant, has been unable to confirm the work of Rygh, Rygh and Laland, who recently claimed to have isolated and synthesized vitamin C. Reference has already been made in the *Journal* (April 30th and May 21st) to Professor J. C. G. Ledingham's work on the Paschen and Borrel bodies and on the viruses of pleuro-pneumonia and agalactia. Professor Ledingham has also demonstrated the appearance of agglutinins for Paschen bodies in the blood serum about the fourth or fifth day after a dose of vaccinia virus. Dr. C. R. Amies, in extending this work, has been observing the development of agglutinins in the serum of man and monkey after inoculation with the virus. Making use of the serological method of investigation, he is now engaged in determining the relations to each other of the viruses of vaccinia, variola, and alastrim. Further work undertaken by Professor Ledingham and Dr. Eagles supports the claim that the Paschen body is the aetiological agent in vaccinia. Investigation into the path of spread of the virus of poliomyelitis by Dr. Hurst affords no evidence against the axonic entry of the virus in human cases. During the past year a potent anti-pneumococcus serum (Type 1) has been produced in horses, and work on the production of a Type 2 serum is in progress. Drs. Petrie and Morgan, experimenting on the therapeutic value of the Type 1 serum, have cured pneumococcal infection in the mouse, even in the presence of bacteriaemia. These results have an important application in the treatment of human acute lobar pneumonia. In his researches into the spermicidal action of quinones and aromatic aldehydes, Dr. Gulland has shown that the quinones, and to a lesser extent the quinols, exhibit high spermicidal activity. Other extensive researches recorded in the report are further indications of the valuable work that is being carried on at the Lister Institute.

THE MUSEUM OF THE ROYAL COLLEGE OF SURGEONS

Sir Arthur Keith, in his annual report on the museum of the Royal College of Surgeons of England, states that the laboratories at Downe are nearing completion. The details of this extension of the scheme of research already initiated in the College laboratories were explained in last year's report. At that time the question of the provision of an adequate scholarship fund remained unsettled; this has now been set at rest, thanks to the signal service rendered to the museum by Lord Moynihan in enlisting the interest of generous contributors. Sir Arthur has made research at the College the subject of a brief historical retrospect. When the College took over the museum at the beginning of the nineteenth century it assumed the responsibility of developing it in accordance with the Hunterian

[1] *British Medical Journal*, May 21st, 1932.
[2] The Lister Institute of Preventive Medicine. Report of the Governing Body, 1932.

tradition ; this embraced biological research in a wide sense, as indicated by the several departments, which included, for example, an anthropological section. Under the first Conservators, who were morphologists, biological research was neglected, and the Hunterian tradition appeared to be lost. In recent years there has been a return to this tradition, and biological research is encouraged—this is evidenced in such work as that of Mr. R. H. Burne on the lymphatic system, on the glands of internal secretion, and on the sympathetic nerves ; of Drs. Scott Williamson and Innes Pearce on the physiology of the thyroid and pituitary glands ; and of Mr. S. H. Thompson on the parathyroid. The council has naturally expected surgical interests to be regarded. During the morphological period these were completely neglected, and the Council, as a corrective, commissioned Paget to draw up a pathological catalogue. Later, under the advocacy of Sir Jonathan Hutchinson, surgical laboratories were built over the work-rooms of the museum. This scheme proved a failure, apparently mainly from lack of funds. Under the presidency of Lord Moynihan laboratories have been built and equipped for surgical research, an account of which is contained in the report for 1930. In these, investigations are now being conducted by Sir Charles Ballance on the suturing and grafting of nerves, by Mr. L. F. O'Shaughnessy on certain problems of thoracic surgery, by Mr. Winsbury White on infections of the urinary tract, by Mr. H. Jackson Burrows on cytological problems, and by Mr. E. H. Muir on the prostate. Apparently the new laboratories at Downe will also be available for surgical as well as for biological research. The interests of surgery may now be said to have received adequate recognition. The additions to the museum of more especial interest to medical men are enumerated in the report of the pathological curator, Mr. C. F. Beadles, who has referred in some detail to the more notable specimens. Among these perhaps the most interesting is Mr. H. E. Griffiths's specimen of what a few years ago would have been called colloid carcinoma of the omentum, with which it is almost identical in appearance ; but further investigation led to the discovery of a ruptured mucous appendicitis as the source of the trouble. Only a few cases have been recorded, but the condition is important to recognize from the point of view of treatment and prognosis. Another interesting specimen, generously presented by Professor Sebrechts and Dr. Glorieux of Bruges, consists of three bones from a fine example of generalized osteosclerosis, or "marble-bone disease." The bones of the entire skeleton consisted of compact osseous tissue throughout. The condition apparently leads to a loss of resiliency in the bones and consequent tendency to spontaneous fracture. Two pelves from cases of diffuse carcinoma of bone secondary to carcinoma of the breast were received from Mr. G. F. Stebbing through Sir Charters Symonds. Almost the whole of the osseous tissue in these remarkable specimens is replaced by diffuse carcinoma, with practically no external deformity. Many other specimens of interest are mentioned among the hundred and twenty-six additions to the collection which will be on view to visitors at the museum from July 7th to August 2nd.

THE TRAFFIC IN NARCOTIC DRUGS

The last report of the Advisory Committee on the Traffic in Opium and other Dangerous Drugs to the Council of the League of Nations gives statistical tables showing the manufacture of morphine, heroin, and cocaine during each of the years 1926 to 1930 as returned by the principal producing countries. The tendency in most cases is towards a reduction of the amounts manufactured, notably in the case of Great Britain as regards morphine and heroin. In France there has been a considerable increase in the output of morphine during 1929 and 1930 ; in the latter year the production amounted to 12,495 kg., to which must be added 2,216 kg. of heroin. Germany and Japan are the largest producers of cocaine, over 1,000 kg. of the drug having been manufactured in each of those countries in 1930. It is only since 1920 that cocaine has been produced in Great Britain, the amounts for 1928, 1929, and 1930 being 129, 238, and 318 kg. respectively. The Committee had previously reported that "cocaine is streaming into India, Malaya, and other regions in large quantities from centres of distribution which are at present only partially known. Drugs and opium are being smuggled, also, in large quantities into the United States and Canada." Persian opium continues to be exported to China on a large scale. Forged labels have been repeatedly discovered on illicit consignments of drugs to the Far East. It is interesting to learn that the United States—which is a party to the Hague Convention of 1912, but not to the Geneva Convention of 1925—has signed and ratified the Convention of 1931 on the limitation of the manufacture of narcotic drugs. In view of the wide diversity that appears to obtain in regard to the legislation enacted in the various countries which are parties to the several Conventions, and the way in which such legislation has been effectuated, it is good to know that the secretariat of the League is engaged in collecting information in order to prepare a digest of the legislation in the various countries which are parties to the Hague and the Geneva Conventions. It will be not less interesting to learn, in view of the illicit traffic that still obtains, how such legislation has been enforced.

NOMENCLATURE OF DISEASES

In a leading article on May 14th (p. 892), referring to the new edition of the official *Nomenclature of Diseases*, we explained that the object of a national nomenclature is to secure uniformity, precision, and consistency in the terms used in making returns for statistical purposes. "It is therefore essential that only such names as are generally recognized and in common use should be included in the lists, and that the same names should convey the same meaning to all who use them." Since it is of great importance that medical practitioners who sign certificates of death or disability should follow the official terminology in naming diseases, the Government has issued free copies of the *Nomenclature* to practising members of the profession. The letter criticizing this decision which appeared in the *Times* of Monday was obviously written under a misapprehension. The *Nomenclature* is an indispensable work of reference which should be on the desk or consulting-room bookshelf of every

doctor whose work requires him from time to time to fill in death certificates and health certificates. We understand that a question on this subject is to be asked in the House of Lords on July 6th, when no doubt the representative of the Ministry of Health will make the position quite clear, and we hope that the Government's reply will be as fully reported in the newspapers as it will be in our Parliamentary Notes.

DIPHTHERIA MORTALITY IN THE UNITED STATES

The ninth annual summary, by the *Journal of the American Medical Association*,[1] of diphtheria mortality in ninety-three cities of the United States with a population of 100,000 and over, shows that the highest mortality was in the cities of the three Southern groups, but it could not be decided whether this was due to an excessive prevalence of the disease in 1931 throughout the Southern cities, to an unusual freedom from or mildness of diphtheria in the Northern cities, or to more extensive active immunization in the latter group. The number of diphtheria deaths in the ninety-three cities, and the death rate for the total population concerned, were both much lower than in any previous period, being less than half what they were in 1929. It was, however, impossible to say how far this decline in diphtheria mortality was due to natural fluctuation in the severity of the disease and how far to prophylactic inoculation and other methods of control.

THE CITY COMPANIES AND EDUCATION

Most Londoners know that St. Paul's School is managed by the Mercers' Company, and that the Company of Merchant Taylors is responsible for the control and support of the great school which is known by its name, and perhaps some other instances of educational benefactions under the control of the corporation or the guilds are familiar ; but few of us realize the value and extent of the educational work carried on by them. At the fourteenth annual Conference of the Association for Education in Industry and Commerce, held in London last week, Sir Francis Goodenough chose for the subject of his presidential address, "The City Livery Companies, their services to education: An historical survey and a forecast." In this he gave an account, which did not profess to be by any means complete, of many noble charities and excellent schools maintained out of trust funds. Unfortunately, in those centuries in which most of the bequests were made, medical education had not yet been seriously thought of as a charitable object. The two City Companies whose freemen practised medicine and surgery—namely, the Barbers and the Apothecaries—have no endowments for medical education under their care, although the Apothecaries, as an examining and licensing body, are represented on the General Council of Medical Education and Registration, and the Barbers formerly provided instruction in anatomy by public demonstrations on the bodies of condemned felons. Sir Francis Goodenough tells us that the Merchant Taylors Company gives scholarships to St. Thomas's Medical School, a fitting object for the charity of a City Company, seeing that it was the citizens of London who on the dissolution of the monasteries bought from the King the almonry in High Street, Southwark, which had been founded in 1213 by the then prior of Bermondsey. Ever since 1552 the corporation has fostered this hospital "for poor and impotent people." But if neither the corporation nor the guilds have done much directly for medicine, they have done much for the ancillary sciences. The Grocers' Company, who originally dealt in drugs, and so have an interest in therapeutics, have been generous supporters by means of their scholarships for research in sanitary science and their grants to the Lister Institute. The Drapers' Company has munificently helped the East London College, which in co-operation with the London Hospital prepares students for the first medical examination of the University of London. The Goldsmiths' Company, too, has done much for scientific education, and contributed to the cost of the new buildings for the University of London in Bloomsbury.

[1] *Journ. Amer. Med. Assoc.*, 1932, xcviii, 1644.

EPSOM COLLEGE AND MEDICAL WOMEN

Dr. Raymond Crawfurd, in his letter published at page 32 announces with pardonable pride the realization of a project he has long had at heart as Chairman of Council of the Royal Medical Foundation of Epsom College. When the College was founded seventy-seven years ago "medical women were almost non-existent, and accordingly the Act of Parliament ignored them." Any attempt to provide for them in the amending Act of 1894 would have aroused enough controversy to wreck that measure. Now at long last Parliamentary sanction has been obtained for the inclusion of medical women and their children in the benefits afforded by the Foundation. By the good offices of the Charity Commissioners and the Board of Education this disability has been removed without expense to the College Council, which could not face the cost of another private Bill. As Dr. Crawfurd compactly puts it, the Foundation is the nucleus round which the whole school has grown up ; but whereas "college" at Winchester and at Eton is endowed, the Royal Medical Foundation of Epsom College depends on pecuniary support afforded year by year. In drawing the attention of medical women to the important changes now effected, he adds an appeal for financial aid to those who so far have felt no obligation to give it, and invites medical women to act as honorary local secretaries in districts still unprovided with this form of voluntary service.

VICTOR HORSLEY LECTURE

The fourth Victor Horsley Memorial Lecture will be delivered by Dr. E. D. Adrian, F.R.S., Foulerton professor, Royal Society, in the lecture theatre of University College Hospital Medical School, Gower Street, W.C., on Wednesday, July 20th, at 5 p.m. The subject of the lecture is "The visceral sense organs." The chair will be taken by Mr. Wilfred Trotter, F.R.S., senior surgeon, University College Hospital. Admission to the lecture is free on presentation of visiting card. Tea will be served in the library of the medical school at 4.30 p.m., when an opportunity will be given of seeing the portrait of Sir Victor Horsley, which has recently been presented to the School by Lady Horsley and Mr. Trotter.

THE BLOOD GROUPS IN GENETICS AND ANTHROPOLOGY

In the *British Medical Journal* of March 5th (p. 437) some account was given of the importance of the blood groups for clinical medicine and pathology, and their possible bearing on the detection of crime and the proof of paternity. Professor J. B. S. Haldane, in a paper read before the Royal Anthropological Society on April 22nd, proved that they were equally important in the study of the evolution of the races of mankind. He pointed out the necessity for a very critical attitude towards any attempt to deduce racial origins from the data of physical anthropology. The science of genetics, he explained, deals with the nature and origin of innate differences between organisms. A parent transmits to his offspring, not characters such as head length and skin colour, but self-perpetuating units in the nucleus of the cell, known as Mendelian factors or, more recently, as genes. Therefore, if an anthropological character is to yield results capable of genetical analysis, it must have four attributes. It must be determined by a small number of genes only ; it must not be strongly affected by environment ; it must not be subject to natural or social selection ; and it must separate the population into well-defined groups which are not too rare. For example, he pointed out, stature is the resultant of a great many genes, and its analysis is very difficult: skin colour is affected to an unknown but considerable extent by the environment and by selection. Selection is, he said, only ruled out if two criteria are fulfilled: groups of similar origin in widely different environments should possess the character in the same proportions, and the proportions should be different in endogamous groups of different racial origin living in the same environment.

The importance of the four blood groups for genetics is that they depend on the only set of characters so far discovered that fulfil all these conditions. These characters, or genes, are called A and B, and are manifested by the presence of two specific agglutinogens on the red corpuscle, the effect of which is to render the corpuscles of a person possessing either character capable of being agglutinated by the serum of a person possessing the other. These agglutinogens are real substances, which can be isolated from the corpuscles by washing. There is no method, in the absence of known serums, of differentiating between the two characters ; they are distinguished only by their mutual reaction. A large proportion of the human race possesses neither, and a small proportion, dependent upon the incidence of the two factors in a given population, possesses both.

Professor Haldane, in explaining the heredity of the blood groups, follows the hypothesis of Bernstein. For some years there have been two conflicting theories in the field. Von Dungern and Hirszfeld believed that the characters constituting the groups were inherited as two independent factors ; Bernstein holds that the dominant genes A and B, together with a recessive gene R or O, form a series of three multiple allelomorphs, combining two by two and localized at one chromatic point. The latter theory has been amply confirmed by many independent investigators, and has practically displaced the theory of two independent factors. The genes A and B have a definite location in a definite chromosome ; as the germ cell possesses only two sets of chromosomes it can hold only two of these genes, and consequently only one gene can pass into the spermatozoa.

The genetic formula is as follows:

Group.	Genes.
O	RR
A	AA AR
B	BB BR
AB	AB

The foundation of the triple allelomorph theory is the observed percentage of the group AB in given populations and the possibilities of inheritance from AB and O parents. By this theory it should not be possible for an AB parent to have an O child, or an O parent to have an AB child, and such cases are practically never observed. Professor Haldane mentioned that he had once, and only once, met a case where an AB mother had an undoubted O child ; he pointed out that work on Mendel's law had often shown exceptions in the proportion of about 1 in 2,000. He suggested that the mother possibly had three chromosomes, or that a mutation was occurring. The child was repeatedly tested, always with the same result. The possible progeny from various matings are, therefore, as follows: [1]

Matings.	Progeny.
AB × AB, A, or B	AB, A, or B
AB × O	A or B
A × B	AB, A, B, or O
A × A or O	A or O
B × B or O	B or O
O × O	O

The table is borrowed from Dr. F. C. Martley's paper, one of the clearest explanations of blood-group heredity that have appeared.

The investigation of the blood groups in large samples of different populations gives very interesting results, some of which were enumerated by Professor Haldane. Broadly speaking, they seem to suggest that originally the human race possessed neither the A nor the B character, and was therefore all of Group O. At some remote period the character A appeared by mutation of the R gene, possibly in Western Europe, and spread eastward by successive waves of migration ; the character B appeared somewhat later in Central Asia, and radiated in all directions. Snyder[2] distinguishes seven types. The European type, with its high frequency of A and low frequency of B, and the Indo-Manchurian type, with its high frequency of B and rather low frequency of A, represent the extremes of racial development of the two characters. The Pacific American type (American Indians, Eskimos, and Filipinos), with its very great preponderance of the O group, represents, according to most authorities, the residue of mankind as it was before the genes A and B were evolved. Snyder recognizes an intermediate type between the European (chiefly A) and the Asiatic (chiefly B), and quotes the interesting observations of Popoviciu, who found that in Rumania the valley people show a relatively high proportion and the hill people a relatively low proportion of B, suggesting an invasion from the East, which permeated the accessible regions and left the remote ones intact. Parr found a striking difference between the blood-group proportions in Christian and in Muslim Arabs in Syria. Snyder's Hunan type in Southern China shows a frequency of A and a rarity of B similar to that of the European type, an interesting finding, which may possibly be explained by an independent mutation of A or by its importation early in the history of the differentiation of the surrounding peoples. Snyder points out that the blood-group evidence supports the belief that early in the racial history of the Asiatic Mongols Korea was the birthplace of a race now represented by the Koreans and Japanese, a race which at its differentiation was strongly infused with Caucasian elements. The Australian type also shows a high frequency of A, but, according to Snyder, the extreme rarity among the Australian peoples of B differentiates them from the peoples of the European type. He points out that, unlike the other islands of the Pacific, in which the inhabitants show a fair propor-

[1] *Trans. Med.-Leg. Soc.*, 1931, xxv, 31.

[2] *Blood Grouping in Relation to Clinical and Legal Medicine.* London: Baillière, Tindall and Cox. 1929.

tion of both genes, Australia harbours a race showing every indication of early isolation, followed by the invasion of some race not unlike the present Caucasian races. Unfortunately the blood-group distribution of the Tasmanians will never be known. Professor H. H. Woollard, in discussing Professor Haldane's paper, gave some interesting confirmative data. He found among the coast natives a 5 per cent. distribution of B, but none in the interior, where 60 per cent. of the people were A. He deduced from these findings that the Australian continent was originally populated by a canoe party containing A's but no B's. He differs from most workers in thinking that the characters A and B have always existed in the human race ; he quoted the discovery by Landsteiner and Miller of these genes in the large apes,[1] and pointed to the fact that the Australian natives, with their considerable proportion of A, are obviously much more primitive than the North American Indians, who, except for foreign influence, are all O. Other workers, however, do not show quite so high a percentage of A in Australia as does Professor Woollard, and all the figures but those of Cleland in 1926 show an incidence of O in between 50 and 60 per cent.

The distribution of the B factor offers the most interesting field for speculation. Professor Haldane's figures for B rather understate its frequency according to other workers. He said that the only sample ever showing more than 30 per cent. of B was taken in the Punjab, but Wagner in 1926 reported a 30 per cent. incidence in Egyptians, and Hirszfeld in 1919 found that 41.2 per cent. of natives of India belonged to that group. Spanish Jews show a higher percentage—23.2, according to the Hirszfelds (whose work among the welter of races in Salonica during the war still stands as a classic)—but German Jews do not show a greater frequency than other Germans ; the percentage begins to rise as one travels east, and is in the neighbourhood of 20 in Finland, Russia, and Turkey. It is about the same in South China and Japan, and in North China approaches the India figures. Gypsies, originally natives of India, show an incidence of nearly 40 per cent. Professor L. Hogben says that the B frequency reaches 23 per cent. among the Bantu and Senegalese people of Africa, though it is rare among the Bushmen. The most intriguing figures given at the discussion were those of Professor R. Ruggles Gates. He reported a local frequency of B among the Eskimos at the mouth of the Mackenzie River, in the midst of a vast area inhabited almost entirely by an O group population, but, what was more interesting, quoted recent work on the natives of Tierra del Fuego in remote South America to show a concentration of B which baffles speculation. Of twenty-two members of the Ona tribe, living on the mainland, twenty belonged to Group O ; but out of thirty-three Yaghans—a sample which comprised nearly half the population of a lonely island community—thirty were Group B. A possible explanation of this extraordinary finding is that the Yaghans are the descendants of a party of shipwrecked Asiatic sailors ; at any rate, this seems more likely than an independent mutation of B. The same explanation would apply to the high proportion of B among a small section of Eskimos. Dr. Penrose mentioned that an investigation had shown a slight correlation between the B character and dark hair in Holland, and Professor Haldane considers that there is no evidence of correlation between B and Mongolian characteristics.

Beyond this point there is nothing but speculation. Professor Haldane suggested the possibility of investigation with other characters which are not affected by environment and selection ; he mentioned two genes which have been called M and N, the property of which is to cause certain reactions in the serum of rabbits, and one of which is possessed by every person ; and another which enables its possessor to taste phenyl-thio-carbamide when placed on the tongue. It is possible that, now that the search for these stable characters has been initiated, more will be discovered. At any rate, Professor Haldane pointed out a field of research in anthropology which is likely to yield more valuable results than have so far been achieved in that elusive science.

[1] Snyder: Loc. cit.

EPSOM COLLEGE

ANNUAL GENERAL MEETING

The seventy-ninth annual general meeting of the Governors of Epsom College was held at the London Office, 49, Bedford Square, W.C., on June 24th.

The chairman, Dr. RAYMOND CRAWFURD, announced that the Epsom College Scheme (to abolish voting and to substitute therefor election of foundationers and pensioners by means of a Selection Committee consisting of ten members of the Council and ten Governors of the College who were not members of the Council) had received the Royal Assent on June 16th, and that therefore this was the last occasion on which members would receive the yellow slips giving the result of the voting. He reminded them that no less than 93 per cent. of the Governors had been in favour of this move, which would have beneficial effects, not only on the Foundation but also on the school. Another result of the passage of the scheme through Parliament was that medical women and their sons were now equally eligible with medical men and their sons to receive the benefits of the Foundation. In order to assist parents as far as possible during the present period of stress the Council had decided to award two open entrance scholarships annually of £100 each in addition to two open scholarships annually not exceeding £60 each. They had awarded five open scholarships this year, where there were only two vacancies, and he announced, to the great approval of everybody present, that the Council had also decided to educate and maintain this year two additional foundationers, bringing the total up to 52.

The chairman also referred to the decision of the Council to commence work at once on the building of a new block containing biological laboratories and museum. The Council felt sure that the Governors would agree with them in their determination to provide at Epsom the very highest facilities for the study of this subject, which was daily increasing in importance.

ELECTIONS

The following were the successful candidates for pensionerships, with the number of votes given to each:

*Coombe, Dr. Thomas S.	3,678
*Ashton, Mrs. Charlotte R.	3,473
*Drummond, Mrs. Ellen	3,146
†Hine, Mrs. Emily	3,001

* Ordinary pensioners. † Pugh pensioner.

At the Council meeting, which will be held on July 6th, Dr. Archibald J. Campbell will be appointed a "Christie" pensioner, Mrs. Mary V. Knight will be appointed a "Highett" pensioner, Mrs. Lowiny I. Addison will be appointed an ordinary pensioner, and Mrs. Louisa Knox will be appointed a "Pugh" pensioner, vacancies having arisen. Two other pensionerships will also be awarded.

The following were the successful candidates for Foundation Scholarships, with the number of votes given to each:

Harty, Desmond I.	11,324
Archibald, Roy McL.	10,991
Wilman, Peter N.	9,814
Cotes, John C. D.	9,009
Pim, John A.	8,332
Prentice, John R.	8,232
Todd, Kellingworth R.	8,211
*Hancock, John W.	7,465
*Fairhall, Christopher H.	5,708

* Additional scholarships granted by the Council.

The following members of the Council were re-elected for a further period of three years: Dr. Hugh W. Armstead, Mr. Douglas C. Bartley, LL.B., Sir John F. H. Broadbent,

Bt., M.D., Sir Ernest Goodhart, Bt., Mr. A. C. C. Parkinson, C.M.G., M.A., Dr. Harold Spitta, M.V.O., Sir StClair Thomson, M.D., F.R.C.S., Mr. W. Cyril Tomlinson, A.C.A., Mr. T. Hollis Walker, K.C., and Dr. W. Essex Wynter.

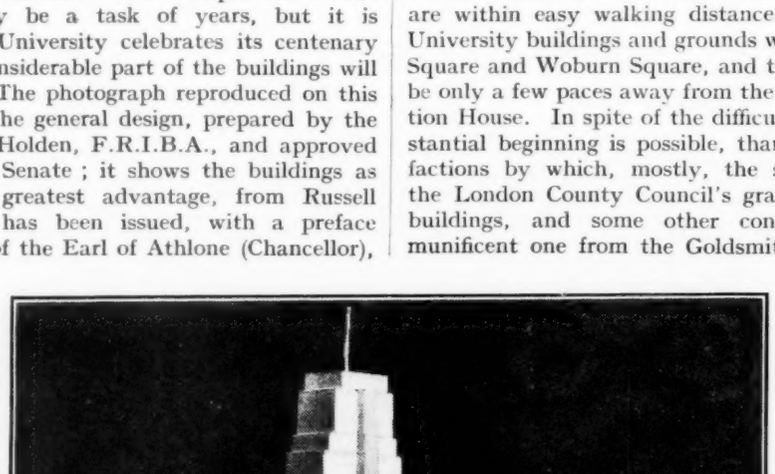
Dr. Ronald Cove-Smith was elected a member of the Council in place of the late Dr. Seymour Taylor.

Colonel Norman C. King and Mr. P. D. Leake, F.C.A., were re-elected auditors, and Mr. Horace H. Rew was elected an auditor in the place of Sir Frederic G. Hallett, retired.

England and Wales

London's New University Buildings

Plans are actively taking shape for the occupation of the Bloomsbury site of 10½ acres by the new buildings of the University of London. The completion of the project will necessarily be a task of years, but it is hoped that when the University celebrates its centenary at the end of 1936 a considerable part of the buildings will be ready and in use. The photograph reproduced on this page is of a model of the general design, prepared by the architect, Mr. Charles Holden, F.R.I.B.A., and approved by the Court and the Senate ; it shows the buildings as they will appear, to greatest advantage, from Russell Square. A pamphlet has been issued, with a preface bearing the signatures of the Earl of Athlone (Chancellor), Lord Macmillan, (Chairman of the Court), and other academic officers, recounting the noteworthy history of the University and the future plans. It shows by means of a map how remarkable an aggregation of higher educational institutions has grown up around the University. Apart from University and King's Colleges, which are actually incorporated in the University, the schools number thirty-four, including the medical schools attached to the great hospitals, and are spread from Stepney to Richmond, and from Highbury to Beckenham. Each school enjoys a considerable amount of autonomy, but each is connected with the Senate in all educational matters, and each looks to the Court for financial assistance. It is not proposed, nor would it be desirable, to bring all the University institutions on to one site ; many of them must be dispersed about London, and the medical schools in particular must be localized at the twelve teaching hospitals. But what the University has so far lacked is an adequate headquarters, where the central administration can be focused, where academic ceremonies can take place with dignity, and where the University treasures, in the shape of its library and art collections, can be housed with advantage. It has been felt also that something architecturally impressive was needed to signify that London, in addition to being the political, commercial, and social capital, was no mean university city, even though without the ancient traditions of Oxford and Cambridge. The classical tower dominating the University group, which will be visible from some of the main thoroughfares of West Central London, will fulfil that purpose, and at the same time present a neighbourly front to the British Museum. The University centre for the last thirty years has been the Imperial Institute, a building not designed for the purpose, not identified with the University, and affording very inadequate accommodation. On the Bloomsbury site, which has been acquired largely through the generous aid of the Rockefeller Foundation, the administrative work will be accommodated, and there will be buildings for the library, for the Institute of Historical Research, for the Institute of Art (made possible by the generosity of Mr. Samuel Courtauld, Sir Joseph Duveen, and Sir Robert Witt), the Schools of Oriental and of Slavonic Studies, and other institutions. A great hall will be built, also provision for the Students' Union and other University activities, and in due time residential accommodation. The site is well chosen, for University College, the oldest of the colleges, and the London School of Hygiene and Tropical Medicine, almost the youngest, are on the north and west, and four of the medical schools are within easy walking distance. On the east side the University buildings and grounds will form a side of Russell Square and Woburn Square, and the north-east corner will be only a few paces away from the British Medical Association House. In spite of the difficulties of the times, a substantial beginning is possible, thanks to the private benefactions by which, mostly, the site has been provided, the London County Council's grants towards the general buildings, and some other contributions, including a munificent one from the Goldsmiths' Company.



LONDON UNIVERSITY: PROPOSED NEW BUILDING.

King Edward's Hospital Fund

The annual report of the General Council of the King's Fund for 1931, many of the details of which were referred to in the Prince of Wales's speech reported in the *Journal* of June 18th (p. 1140), gives an analysis of the distribution of £294,313 during the period under review. One hundred and forty-six hospitals and fifty-seven convalescent homes were in receipt of grants, while £28,750 was distributed for hospital extensions and improvements, and £3,000 granted to convalescent homes not attached to London hospitals. The astonishing figure of £3,247,491 represents the total sum distributed among the hospitals and convalescent homes during the last ten years. The expenses of the Fund during the year worked out at 9d. per £ of the total received. Grants towards hospital expenditure, under the pensions for nurses and hospital officers' scheme, amounted to £19,313. From the special reserve set aside to provide grants for this purpose £9,000 was taken from 1930–1, the remaining amount being provided out of current income. By the end of the year the scheme had been adopted by 109 London hospitals (82 per cent. of the whole), and by 223 hospitals outside London. As regards propaganda, the King's Fund film has been furnished with a running commentary and a spoken introduction by Lord Burnham, and now includes a visit by the Prince of Wales to one of the hospitals on the Fund's books. In November a statement was published on the effect of the national crisis on the voluntary hospitals: the value of the work carried on by the latter, the need for covering its cost, and the fact that voluntary provision of the funds was the method of least hardship were emphasized. The report concludes with an appreciation of the assistance

rendered by the press in keeping before the public the claims of the hospitals.

The report of the Propaganda Committee of the Fund refers to the exceptional difficulties encountered during the year. The committee records its appreciation of the valuable services of Lord Burnham, who has always been ready to assist personally in the furtherance of its various schemes. In pursuance of the committee's desire to bring about an atmosphere favourable to successful co-operation between the voluntary and London County Council hospitals, a conversazione was held in March, at which all speakers emphasized the desirability of establishing friendly relations between the two branches of hospital service. Another conference in March, following negotiations with press agencies, dealt with a scheme by means of which interesting items of hospital news might be printed from time to time. Mock trials, held at the London School of Economics, have now acquired a wide reputation, and have shown their value in obtaining publicity for the Fund. A King's Fund exhibit was shown at the *Daily Mail* Schoolboys' Exhibition, at which demonstrations of bacteria, *x* rays, and artificial sunlight were given. Lectures on the work of voluntary hospitals were also delivered during the year. Messrs. Humphreys, Ltd., of Knightsbridge, have now offered to carry out the work of constructing at their own expense a scale model of an up-to-date hospital, and this work should be completed by the end of 1932.

Cancer Campaign in Yorkshire

Although no outstanding discovery has been made during the year ending March 31st, 1932, the annual report of the Executive Committee of the Yorkshire Council of the British Empire Cancer Campaign records the results of investigations carried on at Leeds, Sheffield, and elsewhere. Before Dr. J. S. Young left Leeds to accept the Musgrave chair of pathology in the Queen's University, Belfast, he had broken new ground by inaugurating a special study of experimental hyperplasia. The observation that a variety of acid buffer solutions with a *p*H of 3.4 or less gave rise to well-marked proliferation of the epithelial cells in the rabbit's lung was confirmed. Certain buffer solutions proved to be more effective than others, but hydrochloric acid and sulphuric acid were found to be effective only in relatively high concentrations. It would seem, therefore, that these acids must be neutralized in large part shortly after entry into the pleural sac, and also that the acid influence promoting proliferation is not instantaneous in its action. A series of alkaline buffers were similarly tested, the most suitable proving to be McIlvaine's series of mixtures of citric acid and disodium phosphate. It was thought that more alkaline buffers would produce a more convincing reaction, but this expectation was not fulfilled, no striking evidence of hyperplasia being observed with any other alkaline buffer until the alkalinity reached the very high degree of *p*H 12 or more. Dr. Berenblum has continued his researches on the anti-carcinogenic action of mustard gas, and the fact has been established that the carcinogenic principles in tar are not the only agents against which mustard gas can exhibit its inhibitory property. This gas appears to function by virtue of its action on the cell and not on the cancer-inducing agent. Professor Kennaway, with his assistants, has placed a series of carcinogenic substances of known chemical structure at the disposal of investigators, and has shown that the cancer-inducing properties of these substances definitely depend upon certain structural arrangements of the compounds. The chemistry of the cell would appear, therefore, to be an important factor as regards carcinogenesis. At Sheffield, biochemical studies on the production of lactic acid in cancerous growths have been continued. Evidence has been obtained in mice that a definitely accelerating effect on tumour development is traceable to fresh ox liver therapy.

Queen Charlotte's Maternity Hospital

Princess Helena Victoria and Princess Marie Louise were present at a dinner given by Lady Howard de Walden and Mrs. Edward Baron at the Savoy Hotel on June 27th in support of the Rebuilding Fund of Queen Charlotte's Maternity Hospital. Lady Howard was able to announce donations totalling £8,200. Dr. T. Watts Eden, President of the Royal Society of Medicine, made an important speech, calling attention to the urgent need for the construction of the next stage of the new Queen Charlotte's, which will comprise at least 100 public beds with unrivalled facilities for teaching. Lord Riddell, who was recently elected an honorary Fellow of the British College of Obstetricians and Gynaecologists and is the only layman to enjoy this distinction, also spoke. A feature of the dinner was the first showing of a film depicting the many activities of Queen Charlotte's, not only in bringing into the world a quarter of the babies born in that great area of London for which it is the sole maternity hospital, but also the work at the new isolation hospital for puerperal fever at Ravenscourt Park and in the adjoining Bernhard Baron Memorial Research Laboratories.

Scotland

Clinical Research in Scotland

The Scottish Committee of the British Medical Association, having had under consideration how it might co-operate with the Department of Health for Scotland in furthering medical research in Scotland, recently appointed to meet the Department a subcommittee, consisting of its Chairman (Dr. Elliot Dickson), the Deputy Chairman (Dr. J. B. Miller), Dr. James Young, Dr. John D. Comrie, and the Scottish Medical Secretary (Dr. R. W. Craig). The subcommittee was received on June 17th by Mr. John Jeffrey, Secretary, accompanied by administrative and medical officers of the Department. An informal discussion was held as to the feasibility of arranging for the carrying out of voluntary clinical research on lines that would be of interest to general practitioners and that might provide valuable results for publication. It was agreed that there existed among general practitioners a considerable body of clinical information which, if it could be collected and made available, might be not only of value in itself, but useful in supplementing research in progress by clinical and laboratory workers and in suggesting lines of further inquiry. Various subjects were mentioned as affording possible fields for obtaining useful information by collective observation, and it was suggested that in addition to a subject—or choice of subjects—on which practitioners generally might be invited to collaborate, special subjects—for example, the conditions prevalent in certain areas or among certain groups of the population—might be taken up by groups of practitioners in association. With regard to publication it was agreed that the Department would discuss with the Scientific Advisory Committee the form in which any results obtained might be made generally available either by the issue of special reports by the Department or otherwise.

The Deaf in Scotland

The degree of LL.D. was recently conferred on Miss Helen Keller, the blind and deaf American authoress, by Glasgow University. Miss Keller, on June 20th, attended the annual meeting of the Edinburgh Royal Institution

for the education of deaf and dumb children, at which the Lord Provost, Sir Thomas B. Whitson, presided and moved the adoption of the one hundred and twenty-second annual report. The chairman said that the system of education pursued at this institution was designed to give every pupil a reasonable chance of being restored to normal society, and the directors were now co-operating with the Education Committee of the local authority for the purpose of educating deaf children in ordinary schools in such a way as to mitigate their defect. With regard to the finances of the institution, the ordinary revenue had amounted to £10,792 and the expenditure to £11,547, the deficit being met from the general account, which now amounted to £24,063. Dr. Douglas Guthrie said that much gratitude was owed to teachers of the deaf, because young deaf children were possessed of a spirit of great curiosity, greater even than that of the normal child, since they could not satisfy this curiosity by the ordinary method of asking questions. He recalled that Edinburgh had been a pioneer in the education of the deaf, for Thomas Braidwood had opened a school at Dumbiedykes in this city in 1760, five years before the more famous Abbé de l'Epée commenced his work in Paris. Braidwood had attracted the attention of Dr. Samuel Johnson, who in his *Journey to the Hebrides* had said, "There is one object of curiosity in Edinburgh, which no other city can show, a college for the deaf, who are taught to speak, read, write, and practise arithmetic." The institution had gone far since that day, but further progress would still be made when the necessity was recognized for still closer co-operation between the medical and the teaching professions in this matter. Lord Alness remarked that the institution was a standing and eloquent testimony to the voluntary principle, which abstained on the one hand from compulsory assistance, and on the other from the methods of hospital support which Ireland had imported from Monte Carlo. Miss Helen Keller, after presenting the prizes to successful pupils, congratulated each individually and lip-read their replies. In addressing them afterwards she said that there was nothing like the pride of doing something worth while in order to make one forget one's limitations. They could achieve anything they wanted to if they stuck to it long enough. Many of them made the mistake of thinking that if they were as fortunate as their neighbours they could live better and more useful lives, but she could assure them that if a person could not succeed in his present position, whatever it was, he could not succeed in any other. It was not the environment that people had but the kind of thoughts they were thinking every day and the ideals they were following that made them the kind of men and women they were. Miss Keller subsequently paid a visit to the Royal Blind School, Edinburgh, where she came into personal touch with a number of blind pupils and gave an impressive exhibition of lip-reading. On June 23rd Miss Keller paid a visit to Langside School for the deaf, Glasgow, where she presented the prizes won during the year.

On June 21st the annual meeting of the Scottish Association for the Deaf was held in Glasgow, when Professor A. A. Bowman presided. In speaking of the great amount of unemployment, the chairman said that so far as the deaf were concerned the Government must accept responsibility, but he hoped that in any action it took it would not interfere with the activities of voluntary organizations, for the one thing that the Government could not provide was the personal touch. Dr. James Kerr, in presenting the annual report, said that a great deal of work had been accomplished since this association was formed, and it was of much importance because no duty was laid on municipalities to look after the deaf or to take any account of them in the population, despite the fact that a great deal was done for the blind. It seemed that it ought to be a function of the State to make provision for the boys and girls leaving school who, from lack of training as well as the incapacity of deafness, were unable to compete in the labour market. An experimental scheme was being submitted for a boot-repairing shop, and it was believed that this would not only train the deaf in a suitable employment, but would be able to provide work for them after they were trained. Another training scheme which had been approved was that of horticultural workers.

Department of Health

Dr. G. Matheson Cullen, Medical Officer in the Department of Health for Scotland, retired under the age limit on June 12th. Dr. Cullen was appointed as a medical officer under the National Health Insurance Commission (Scotland) in 1912. He had previously been engaged in private practice in Edinburgh, and was a member of the town council and Convener of the Public Health Committee. Since his appointment as medical officer, he has dealt more particularly with questions of prescribing by panel practitioners and advising as to new drugs and the best means of providing an adequate, and at the same time economical, supply of medicines, etc., for the insured population. His special knowledge has been of great value, and has enabled very considerable savings to be made by Insurance Committees in their expenditure on medicines and medical appliances. He has also been engaged on numerous inquiries on behalf of the Home Office in connexion with its administration of the Dangerous Drugs Acts. Dr. Cullen has been succeeded by Dr. J. M. Johnston.

Dundee Hospital Services

A conference took place on June 24th between representatives of the Public Health Committee of Dundee Town Council and members of the Court of St. Andrews University on the question of reorganization of the city's hospital services. It is proposed by the Dundee Town Council to remove Maryfield Hospital from the category of Poor Law hospitals. The main object of the conference was an inquiry (as provided for in the Local Government (Scotland) Act, 1929) as to whether the University would be willing to co-operate in making this a teaching hospital. Principal Sir James Irvine, on behalf of the University, in agreeing to the proposal, said that in developing Maryfield Hospital an opportunity was offered to do something which was important for the interest of the public health in Dundee.

India

Beginnings of Preventive Medicine in Rural Communities

Further information about the way in which the problems of maternity and child welfare are being dealt with in Indian villages is supplied by Dr. A. P. Pillay, who has now followed up an earlier volume specifically devoted to this subject with a book entitled *Welfare Problems in Rural India*. In this work the outlook is extended to preventive medicine generally. The housing and sanitary conditions in different districts are discussed, and the accounts given of schemes which are already beginning to operate successfully reveal the importance of accurately appreciating the difficulties before devising remedial measures. A broad view of the whole position in a village has to be taken from the first, and the initial steps may apparently be trivial. Even songs about why and how they must wash their babies have an attraction and educational value for the peasantry. The sanitary pioneer must approach village life as a whole, for educa-

tion must come before actual medical reforms, while rural reconstruction, including the improvement of existing industries and the establishment of new ones, must go hand in hand with measures directed against specific diseases if any permanent success is to be achieved. Villages which have for generations been foul owing to the indiscriminate scattering of human and animal excreta not only harbour the insect vectors of infection and reduce the resistance of the inhabitants, but also impoverish them, because, from lack of manure, the fields yield scanty crops. Thus, in many a village, the first steps, whether towards public health or social improvement, are the same —namely, the digging of pits to serve as latrines, followed by the safeguarding of water supplies and the adequate ventilation of houses. Meanwhile education spreads the knowledge that the "dirt" thus collected has a commercial value when put into its right place—that is, on the fields. As a result the crops become richer, and the struggles of the farmers against poverty easier. Suspicion and hostility give place to gratitude, and the way begins to open for more intensive hygienic innovations. The population of India is increasing far more rapidly than is the produce of the soil and the development of industry. Such a persistently adverse ratio would make for disease and degradation of character were it not for the fact that the raising of the standard of living will result in India, as it has elsewhere, in a salutary reduction of the birth rate. The difficulty of obtaining sufficient financial resources to meet these developments is being overcome in some areas by the utilization of the local authorities and consequent reduction of the number of specially trained sanitary workers who would otherwise have to be imported into the villages. Moreover, the increased wealth of such improving villages renders available money for still more ambitious schemes without increasing the strain of local taxation. Evidence that these lines of approach are practically possible rather than Utopian is repeatedly given in the pages of Dr. Pillay's book, which should be particularly valuable in awakening a social conscience in many of the smaller municipalities. Unlike some more pretentious volumes, it indicates clearly what are the first steps to be taken, and how those immediately concerned should set about the task of securing the necessary local co-operation. It also gives a useful survey of the prevailing conditions which conduce to ill-health in rural Indian communities and an account of the Government and local organizations that can be utilized in developing the preventive as well as the curative side of medicine.

Prevention of Cholera at Puri

The two sacred Hindu towns Gaya and Puri are visited by pilgrims throughout the year, but in Puri the Rath Jatra or "Car Festival" in June or July, at the height of the cholera season, causes the sanitary authorities to take special measures in view of the heavy toll of death and disease formerly associated with it. Cholera is already prevalent when the festival begins; the pilgrims bring more infection, and the various ceremonies are highly conducive to its spread. In his annual public health report for 1930 of the Province of Bihar and Orissa, Major S. L. Mitra, I.M.S., officiating director of public health, gives an account of the steps that are at present favoured for minimizing the risk. The Inspector-General of Civil Hospitals details a special staff of four sub-assistant surgeons for duty in the cholera hospital; the public health department deputes five medical officers for duty in the town, and one for inoculation duty at the chief railway station, assistance being given him from the hospital whenever this is possible. Efforts are being made with increasing success to persuade pilgrims to submit to inoculation. The medical officer in charge of each of the six wards of the town of Puri repeatedly visits the lodging houses (which have been medically inspected before being licensed), removes all cases of infectious disease to the hospital, supervises the subsequent disinfection of the house and the sanitation of the whole of his area, and personally disinfects the wells. In 1927 the first attempt was made to protect pilgrims to Puri by anti-cholera inoculation, and over 12,000 submitted; in 1930 the figure had risen to 61,040, while 58,960 of the population were unprotected. Among the inoculated there were seven attacks of cholera, with no death; among the uninoculated there were forty-nine attacks and twelve deaths. Most of the inoculation cases developed cholera symptoms within forty-eight hours of being inoculated—before full protection could have been afforded. A section of the town with an estimated population of 38,800 (including 17,200 pilgrims) was chosen for a bacteriophage experiment, all the wells being so treated. Only seven cases of cholera occurred, as compared with twenty-one in the rest of the town, which contained 37,550 people (including 20,700 pilgrims). Before the wells were treated there were thirteen cases in the subsequently bacteriophaged area, as against seven in the rest of Puri. A well at the railway station was also treated with bacteriophage with a view to prevent the carrying of cholera out of the town; no cases of the disease were discovered in the trains during the period. Major Mitra remarks that this is remarkable, for usually cholera rages in an epidemic form each year in Orissa districts after the festival, but in the year under review the figures did not rise. He believes that this gratifying result is due to the dissemination of bacteriophage by the pilgrims on returning to their own villages.

Correspondence

"FALLEN IDOLS"

SIR,—Loose statements with regard to dates and statistics do not help us towards that "scientific inquiry into truth" for which I pleaded in my Oration to the Medical Society, of which a summary was published in your issue of May 14th.

My esteemed friend and former pupil, Sir Charles Gordon-Watson, in his anxiety to explain that his opinion on the correct treatment of acute appendicitis does not coincide with mine, has, with characteristic energy, published, in the *British Medical Journal* and *Lancet* of May 21st, practically identical letters on this subject. In these he states first that he was house-surgeon during the period when I was surgical registrar at St. Bartholomew's (October, 1892, to December, 1897). As a matter of fact, he was not even qualified until four months after my period of office as registrar had come to an end. Secondly, without stating that he is doing so, he boldly transfers my accurate statistics, which I said dealt with the days "when I was house-surgeon and house-physician" at St. Bartholomew's (1883–4), to his own period of house-surgeoncy some fourteen years later. He then calmly remarks that my statistics give "no true picture of the mortality at that period."

At the earlier period, practically all cases of appendicitis went to medical wards, and my figures, so far as they went, showed that the mortality was very low. At the later period, of which alone Sir Charles had personal knowledge, the fashion of admitting nearly all appendicitis patients, and in much greater numbers, direct to the surgical wards and operating freely upon them was in full swing. The lamentable results which he presumably witnessed, and which have been published in the statistical tables of the hospital reports and the appendices to them, illustrate well the effects of this change of fashion.

Perhaps I may be permitted to explain why in my Oration I stated that I had "had unusually large opportunities of studying" the subject of appendicitis, and said with some confidence that it was the change of fashion that was in the main responsible for the great increase in the mortality of that disease.

From before 1882 until about the end of 1895 no appreciable change took place in the surgical treatment of appendicitis. The admissions to the surgical wards for appendicitis, usually termed "perityphlitis," during 1892, 1893, 1894, and 1895 were respectively five, seven, eleven, and fifteen. (This figure—fifteen—is exceptionally high, because in this year one patient was admitted on no fewer than five separate occasions.) In the next two years the great change in fashion,* of which I was a witness, took place. The admissions to the surgical wards rose suddenly to fifty and forty-eight. The total number of operations of all kinds upon the appendix, including all those upon patients in medical wards, rose from ten in 1895 to forty-three in 1896 and thirty-nine in 1897. It was in these five and a quarter years that, as sole surgical registrar, daily in the surgical wards (over 300 beds) and operating theatres, superintending the whole of the note-taking by the dressers, and of the abstracts of every case that the junior house-surgeons were then obliged to make, and performing all the surgical post-mortem examinations, I had the singular opportunity, scarcely likely to occur again to anyone, of watching closely the practice of ten distinguished hospital surgeons. Some continued to treat their acute appendicitis patients in the older way, mostly with excellent results; while others, mainly but not wholly the younger assistant surgeons, were adopting the newer fashions that had recently come in chiefly from America.

During the whole of this period, 1892–8, I was myself also full surgeon to another general hospital a mile away, with my own service of some forty surgical beds. The experience gained during all these eventful and interesting years has guided me throughout the whole of my subsequent surgical career. It has enabled me to see the folly, as I think, of much of the modern teaching and practice with regard to the operative surgery of acute appendicitis.—I am, etc.,

Wendover, June 25th. JAMES BERRY.

* Possibly due in part to the publication in 1895 of an excellent monograph on *Diseases of the Vermiform Appendix*, by Dr. H. P. Hawkins, assistant physician to St. Thomas's Hospital.

CHRONIC RHEUMATISM

SIR,—The leading article on chronic rheumatism which appeared in the *Journal* of June 11th draws attention to "the confusion that has existed in the past as to aetiology and classification" of this group of diseases, and the hampering effect it has had on our efforts to treat them. This state of confusion is partly due to variation in the use of nomenclature. Some seem to think it is a hopeless task to try and clear it up. I see no reason, however, for despair. There was a time when the same confusion obtained concerning fevers, yet to-day they have been satisfactorily sorted out.

Great advance has in fact been made during the last two decades in arriving at the recognition of clearly defined types of chronic rheumatism and arthritis, and a great deal has been learned about effective treatment. We may not as yet possess any infallible tests of the presence of this or that type in a particular patient, but we have at any rate useful differentiating facts for recognizing them, such as, for example, that if tophi are present we know we are dealing with gout, for no other disease process produces them, and their presence illuminates the whole picture. Again, if we have a polyarthritis with ankylosis of the joints we know that we have to treat a special form of arthritis, no such ankylosis occurring in osteo-arthritis or even in acute rheumatism. In the case of acute rheumatism we have a very clear-cut type affecting the heart as no other type does. Closer clinical observation and careful research into their pathology have assisted in the differentiation of the types. The final assault upon the problem of their aetiology is being carried out step by step with good prospect of success, one of the difficulties being that the causal factors are often multiple, though usually there is one which is predominant. When this assault has been successfully accomplished a correct classification will soon follow. As in other groups of diseases (since there are no hard-and-fast boundaries in nature) we expect to and do find variations in intensity and in areas affected; moreover, more than one type may attack the same patient and run concurrently. This fact is not peculiar to the rheumatic group, but it complicates the aetiological question.

Some of the most pressing problems in the matter of aetiology, which if solved would throw much light on the subject, appear to me to be as follows: (1) What is the cause of the metabolic fault in gout? (2) In osteo-arthritis are the joint lesions (which, by the way, most pathologists are agreed are primarily of a degenerative character rather than inflammatory, as the name of the disease would suggest) caused by trauma alone or trauma plus predisposing factors such as arteriosclerosis; or, on the other hand, are they caused by some poison of metabolic, not of bacterial, origin brought to the joint by the circulation? (3) What part does endocrine dysfunction or imbalance play in these diseases? (4) In the case of infective arthritis, either specific, focal, or zymotic, the evidence is fairly conclusive that bacteria do cause joint lesions either by their toxins or by invading the joint; but in rheumatoid arthritis, which can be the most crippling of them all, we urgently need to know unequivocally whether it is due to factors within the body entirely or to bacteria from without—and if so of what species. Or is this type an instance in which certain predisposing causes must exist before the exciting cause can act? As soon as knowledge on these points is forthcoming a definite step will be made in solving the aetiological confusion.

As the problem of the treatment of chronic rheumatism is still so urgent it is satisfactory to know that the committee which has been set up by the British Medical Association to deal with it is not waiting to tackle the subject until the questions of aetiology and classification have been settled. The profession will await its report with eager interest. Surely there is ample evidence already to show that both in bath hospitals, rheumatic clinics, and many other institutions the treatments which are being given—in spite of imperfect knowledge of the full nature of these crippling diseases—are followed by a good percentage of complete success and abundant relief where cure is impossible. Let us hope that the committee's report will not be delayed, or the carrying out of its recommendations, so that suitable and effective treatment may be more available than it is at present for those who so sorely need it.—I am, etc.,

London, June 20th. LIONEL C. E. CALTHROP.

EPSOM COLLEGE AND MEDICAL WOMEN

SIR,—It is with singular satisfaction that I am able to announce that Parliamentary sanction has been obtained for the inclusion of medical women and their children in the benefits afforded by the Royal Medical Foundation of Epsom College. When the college was founded in 1855 medical women were almost non-existent, and accordingly the Act of Parliament ignored them. In 1894 an amending Act was passed through Parliament as a private bill,

that empowered the college to change its unhappy birth-name to that of "Epsom College." On this change of name depended the very existence of the college, and though at that time medical women were rapidly growing in numbers, it was out of the question that the college should risk the loss of this vital change by the addition of proposals for the inclusion of medical women, which at that time would have undoubtedly excited fierce controversy. So it has come about that until now medical women have continued to be excluded from the benefits of the Foundation, as the council were unable to face the expense of another private Bill. Now at long last, by the good offices of the Charity Commissioners and the Board of Education, this disability has been removed without expense to the college. To show the revolution of feeling in the interim it is sufficient to state that the change was approved by the unanimous vote of the council and by close on 93 per cent. of the governors.

Epsom College is a public school, and all but some 60 of its 415 boys pay fees that cover the whole cost of their education and maintenance, though a reduction of fees is made in the case of sons of medical practitioners. The Foundation is the nucleus round which the whole school has grown up, and is exactly comparable to "college" at Eton and Winchester, with this important exception, that these older bodies can rely on endowments, hoary with age, while our Foundation depends on the pecuniary support afforded year by year. It educates free of all cost whatsoever, including clothing and all other expenditure, fifty needy sons of deceased or disabled medical practitioners, and gives an assisted education to ten more, who, though not necessitous, need some help. A large number of valuable scholarships at Oxford and Cambridge, and at the London medical schools, are open to boys on leaving the school, some of which are exclusively for Foundationers.

Apart from the college there are five scholarships of £120 a year for the education of the needy daughters of medical practitioners, and 180 pensions and annuities are awarded to aged medical men, or, if deceased, to their female dependants.

The council feel that, in drawing the attention of medical women to the changes now effected, they may justly add an appeal for financial support to those who so far have felt no obligation to give it. The work of the college could be so extended as to cover all educational calls, and to benefit a much larger number of those older persons who have gone to the wall in the struggle for existence, with only such a moderate increase of income as is well within the power of the profession. Not only will our secretary at 49, Bedford Square, W.C.1, welcome subscriptions of any amount—one guinea a year or a single donation of ten guineas constituting a governor—but he will be even more grateful for offers from medical women to act as honorary local secretaries in any of the numerous districts that are still unprovided.—I am, etc.,

RAYMOND CRAWFURD, M.D.,
Chairman of Council.

London, June 22nd.

INQUIRIES INTO MENTAL ABNORMALITY

SIR,—All awake to the danger of unchecked propagation by those of deficient or unsound mind, and by those of the "social problem" group, will highly approve of the setting up by the Minister of Health of an official inquiry into the evidence at present available regarding hereditary and transmissible mental disabilities and the effect sterilization is likely to have in their prevention.

Your leading article of June 18th states: "Sterilization . . . it is unfortunate that this measure is usually considered or discussed only in connexion with mental deficiency." This is certainly true, and it is probable that the benefits of sterilization would be much more quickly evident, and better understood, when considered in relation to the recovered insane (mental convalescents) and certain forms of transmissible physical disorders.

It is hoped the special committee will consider the manner in which mental convalescents are at present discharged from our mental hospitals, for heredity plays the most prominent part in the causation of mental disorder, and a considerable proportion of their inhabitants are related by ties of blood. So often does one see women return again and yet again when pregnant or after parturition, and the young adolescents of both sexes discharged to marry and found families which in due time will furnish their quota to the hospital population, all without a word of warning or advice, that one wonders nothing is done to prevent it. About 23,000 patients enter our mental hospitals yearly, of whom over 20 per cent. have previously been inmates, have relapsed, and are readmitted; during the intervals there is obviously nothing to prevent them propagating.

Realizing this, the Denbighshire County Council has sent to its Asylum Board the following resolution:

> That in view of heredity being the chief factor in the causation of mental disorder they should take steps to ensure that every patient of child-bearing age discharged "Recovered" should be instructed that, in not only their own interests, but in that of the State, it was needful they remain childless. The woman should be instructed in methods of family limitation, and to both man and woman the principles of sterilization should be explained, and offered, if desired.

The Hospital Board, conjoint for five counties, has not yet, I regret to say, given effect to this resolution; perhaps an expression of opinion by the special committee might help to bring them into the same way of thinking, and thus assist in reducing the ever-increasing stream which yearly enters their much overcrowded hospital.

I would add that my own county council has recently also approved of information upon family limitation being given to married women under certain defined conditions.—I am, etc.,

WM. W. HERBERT, M.D.

Llangollen, June 24th.

A.M.S. REVISION OF DEPARTMENTS

SIR,—I have just read, with mixed feelings, the official account given in your issue of June 18th (p. 1154) of the Revision of Departments in the Army Medical Service. Doubtless the financial stress of the moment has driven the Treasury to dictate an economy which can only be described as a tragic set-back by those who appreciate the true significance of pathology in Army medical work; but why all this "blarney" about the progressive nature of a step which reduces the prizes of original research from two to one, attempts to combine teaching, research, and high administrative office in one person, and deprives the War Office of the daily and hourly presence of what might accurately be called the Intelligence Department of the Royal Army Medical Corps? If the Director of Military Intelligence were transferred from Whitehall to Camberley and told to act as an instructor at the Staff College, dealing with the intelligence work of the Army in his spare time, this might excite some adverse comment, even if described in the press as a great advance in Army organization. When will the public and the medical profession grasp the fact that Army medical intelligence work is just as important, and its neglect just as expensive, as any other part of military intelligence?

The official statement is unintentionally misleading on one important point. Pathology was transferred to the War Office not after, but before, the European war. Sir William Leishman handed over to me his appointment as professor of pathology at the Royal Army Medical College

at the end of 1913, and assumed duty at the War Office in time to render inestimable service there when the crisis came some months later. It was true that he was not then called a Director of Pathology, but it is the man, not the title, which counts, and it was a fortunate thing for England that the right man was in the right place at a time when any attempt to organize applied pathology from a training college must have ended in disaster.

Little need be said about the personal hardship inflicted on the officer who was holding the position of professor of pathology with conspicuous success before the late "reorganization," and who now finds himself an assistant professor, just as he was eleven years ago! He himself has not made any complaints about it so far as the writer knows; nor is it the custom of officers whose motto is *In arduis fidelis* to bemoan their fate when national economy is applied to them. But it is surprising to find what may be an inevitable, but is certainly a tragic economy, described as a remarkable step forward on the road to efficiency.

Let the medical profession recall what medical science owes to men of the stamp of Sir William Leishman, Sir David Bruce, Sir Ronald Ross, and others, whose names are an inspiration to the young Army doctor. The great war left us with an organization which recognized the value of science in the Army Medical Services and held out a prospect of reward and recognition to the keen man who was ready to devote to research the spare time which may be so pleasantly given to sport or society under the conditions of military life. He could promise himself that he might hope, if conspicuously successful in scientific investigation, to become a professor of pathology and, later, a general on the staff of the War Office, where he might be one of a band of able officers devoting their knowledge and experience to the formulation of the plans so necessary in anticipation of active service, and to problems which exact the best efforts of the most original and progressive minds in the Service. Let us hope, at least, that, if the Army Medical Service has had to bow before the Treasury and cede a position won for pathology by the conspicuous merits of Leishman, Bruce, and others, this retrograde movement may be recognized as such and regarded as no more than a temporary set-back to be put right in the future.—I am, etc.,

S. LYLE CUMMINS,
Colonel (Ret. Pay).

Cardiff, June 21st.

UTERINE INERTIA

SIR,—In your issue of April 2nd there is a letter written by Dr. Mary C. de Garis on failed forceps. Dr. de Garis brings into this interesting discussion the factor of uterine inertia, about which she has written so much.

I am at a loss to understand a lot that is written about this subject. One definition states that: "This condition is the primary uterine inertia that is due to inherent weakness or inefficiency of the uterus." I cannot conceive a uterus that has carried a foetus to full term or thereabouts so physiologically defective; and I have not met with one. I can recall many cases of phthisis, heart disease, cancer, pyelitis resistant in type and—in one case—associated with jaundice of many months' standing, high temperature, and rigors in an elderly primipara. In all cases the uterine contractions have been powerful and delivery not delayed but even rapid. In the same issue (April 2nd) Dr. A. F. Martin refers to this phenomenon in these words:

> "I am of opinion that unsatisfactory pains—so-called uterine inertia—often indicate the presence of some serious abnormality; the uterus is reflexly on its guard, and I have seen the same phenomenon in occipito-posterior cases. I would say: Always be on the look out in cases of unsatisfactory contraction."

This is the position in a nutshell. I do not think I would be far wrong in supposing that Dr. Martin would agree with me in regarding uterine inertia, meaning uterine inefficiency, as a myth.

Involuntary muscle is primitive and powerful. It is deliberate in action and therefore rarely is exhausted. Unlike striped muscle, which acts quickly and vigorously, it is slow in motion. Other active viscera rarely show fatigue from continued functioning *per se*. If this sign appears, it can generally be shown that it is due to two conditions. One is the result of the involuntary muscle being placed at a mechanical disadvantage. Voluntary effort is checked by this cause, and we must not suppose that provision does not exist for recognition of this factor in organs provided with a primitive muscle structure. The other condition is what I would describe as defective or interrupted peristalsis from toxic influences. The latter is most unusual in the uterus, but is probably common in the gastro-intestinal tract and, to a less extent, in the circulatory system.

I gather that Dr. de Garis regards uterine inertia as uterine inefficiency. Therefore I do not understand her. This peculiar attribute of the uterus is strongly emphasized by all teachers and becomes a lifelong dread among the taught. If they were told that it is a sign, and a sure sign, of mechanical disadvantage, as Dr. Martin tells us, the dread would turn to understanding. The tired uterus is like the tired horse hitched to an immovable load. Correct the situation to mechanical advantage and see what will happen. The simile is true in part only. The tired horse has been struggling (voluntary muscle). The uterus, mule-like, has been resting. It is not tired.—I am, etc.,

A. C. F. HALFORD, M.D.Melb.,
F.R.A.C.S.

Brisbane, May 12th.

THE ORIGIN OF TUMOURS

SIR,—In his paper on the origin of tumours, in the *Journal* of April 30th, Mr. Lockhart-Mummery quite rightly states that "the secret of tumour formation . . . lies somewhere in the study of the normal tissue cells," and, further, that "any theory of tumour genesis must be able to explain certain well-established facts." The author believes that the gene mutation theory of cancer, which has been very clearly put forward by Ludford in his article in the Ninth Scientific Report of the Imperial Cancer Research Fund (1930), is able "to explain all the different phenomena that have been observed in tumours and their behaviour," and this is said to be "the strongest argument for believing that this theory of tumour genesis is the true one."

Ludford is fully aware that there is one type of tumour which offers serious difficulties to the gene mutation theory of cancer formation—namely, the filterable fowl tumours, of which the Rous sarcoma No. 1 is the classical representative. As Ludford says,

> "the crucial points to be explained [by any cancer theory] are the remarkable specificity and the immediate action of the filtrates. If we are to explain these filterable tumours of the fowl on the basis of the mutation theory, then we shall have to assume that the active filtrates are capable of inducing immediately, and in a specific manner, a disturbance of the chromosome mechanism."

That the mode of action of the tumour filtrates in inducing in a very short period—infinitely shorter than one is accustomed to in the case of ordinary cancer-producing agents—the formation of a tumour in a new fowl should consist in the specific and constant (in practically 100 per cent.) alteration of some particular gene in one or more mesenchymal cells of the fowl (this is what the gene mutation theory would require) needs, in my opinion, a con-

siderable amount of imagination to believe. It would further be necessary to assume that the injection of the specific agent (in solution) stimulates the cells of the host, which have now become cancerous, to produce *ad infinitum* the same substance, a sample of which has been injected into them. As Gye and Purdy quite rightly state in their recently published book, *The Cause of Cancer*, this would be the

> "exact reverse of what is known to occur in biology; functional cell activity is found everywhere to be a response to the stimulus of a *deficiency* in the available amount of cell product concerned; a sufficiency of a product always checks the production of a further supply. A cell product stimulating a further production of itself *ad infinitum* is a type of action which seems very improbable indeed."

One cannot deny the fact that the behaviour of the agent in filterable fowl tumours resembles as closely as possible that of any self-multiplying agent in virus diseases. I do not believe in the extrinsic origin of the specific Rous agent nor in that of any other specific "cause of cancer." But on the other hand, why should we, at a stage when our knowledge of the microbiological processes which occur in the cell during metabolism, activity, and division are still so rudimentary, try to locate the "seat of cancer formation" in a hypothetical ultra-microscopic gene? Why not content ourselves with stating that a cancer cell is a constitutionally altered cell, which alteration (because it also affects the nucleus) is transmitted to the descendants of the particular cell, and that the seat of neoplasia (both in benign and in malignant tumours) is, at least in the case of mammals, the cell as a whole? In the case of the filterable fowl tumours we then have to make only one additional assumption—which seems to be borne out by well-known facts—that not only whole cells, but also the cell disintegration products, or cell parts, carry the specific character, and are thus the tumour agent or "virus" of the filterable tumour. This cell-borne virus, when entering congenial normal cells, finds there is a suitable medium for self-multiplication and, acting as a slight irritant, it also induces the cells which it has entered to divide and to multiply. In this way the tumour-forming multiplying cells furnish constantly new pasture grounds for the voracious "agent." In the case of mammalian tumours, on the other hand, nothing smaller than the original whole tumour cell and its descendants can be called the "virus" or "parasite." To assume that the cause of neoplasia is an alteration of one particular gene would lead us no further than to assume the more general "holistic" view of the constitutional alteration of the whole cell.

May I refer those interested in this question to two articles which I have published in the *Journal of the Medical Association of South Africa* (December 12th, 1931, and February 27th, 1932).—I am, etc.,

M. DES LIGNERIS,
Research Pathologist, South African Institute for Medical Research.
Johannesburg, May 28th.

A FATAL CASE OF VINCENT'S ANGINA

SIR,—On reading Dr. James's account in your issue of June 4th, I think that the correct diagnosis may quite possibly be one of agranulocytic angina. This condition is well known to American and Continental writers, and numerous cases have been reported from these sources. In the English literature only a few cases have been described.[1] One reason for this may be that the disease is not prevalent in this country. The more likely explanation is that it does occur, but is not recognized, as clinicians are not on the look out for it, and blood examinations are not so frequently made.

[1] Batten, L. W.: *Lancet*, 1929, i, 440; Garrod, L. P., and Williams, R. H.: Ibid., 1931, i, 440.

The essential feature of agranulocytic angina is a rapid progressive diminution in the granular leucocytes in the blood, so much so that in some reported cases not a single cell of this kind has been found in repeated blood counts. The next important sign is sepsis, which as a rule follows, and is not a cause of this intense granulopenia, although in some cases the reverse has been seen—but this is not so common. The sepsis occurs generally in the mouth or pharynx, occasionally at the orifices of the vagina or anal canal, or even on the skin—that is, in places where potentially pathogenic organisms normally exist. Constantly, no specific organism has been found, and blood cultures are sterile. There are always generalized symptoms—fever, malaise, and prostration. Prognosis is very serious, and the majority of patients die after a few days, although a number of cases of recovery have been reported. The prognosis depends largely on the extent of the granulopenia.

Agranulocytic angina is a variety of bone marrow deficiency disease, the marrow, for some reason yet unknown, failing in one of its functions—that of producing granulocytes. This so lowers the resistance of the body to infection that sepsis inevitably follows. It is possibly allied to other marrow deficiency diseases—purpura haemorrhagica and aplastic anaemia—in which the bone marrow fails to produce the proper amount of thrombocytes in the first, and of erythrocytes, granulocytes, and blood platelets in the second. There is usually little change in the red cell and platelet count in agranulocytic angina; but in some reported cases these are also diminished, so intermediate forms of these three diseases may be met with.

Dr. James's patient suffered from acute progressive ulceration of both tonsils, with high fever and prostration, and at first was clinically diagnosed as diphtheria, as were many cases of agranulocytosis which have been reported. No Klebs-Loeffler bacilli were found from a throat smear, only spirillae and fusiform bacilli. A blood culture was negative. The patient died on the twenty-fourth day of his illness. On post-mortem examination multiple small abscesses were found in the cortex of both kidneys, and there were signs of commencing pericarditis and pleurisy. The bone marrow was not examined. This description is typical of the cases of agranulocytic angina which have been published, and a blood count, had it been done, would have settled the diagnosis.—I am, etc.,

Derby, June 23rd. F. GRAHAM LESCHER.

TREATMENT OF VARICOSE VEINS

SIR,—I assume that a varicose vein is always, even the long saphenous vein, a "communicating" or "perforating" vein, and is varicose because of defective valves—more especially defect of those valves near the entrance into the vena comes. I submit that the permanence of occlusion of a varicose vein, by whatever sclerosing drug injected, depends on whether or not the consequent thrombophlebitis, besides being intensive enough, is also extensive enough to reach the valves in the vein where it joins the deeper vena comes. From my own experience of injecting varicose veins (with quinine, glucose, sodium salicylate, sodium chloride, and sodium morrhuate solutions) I had gained, though slowly, the impression that ultimate intensity, and extension, of sclerosing reaction were promoted by stasis of blood in the vein, rather than by emptiness of vein at injection. Doubtless stasis is most effectively obtained by ligation and division.

In 1910 and 1911 it was often my privilege to assist the late Sir James Cantlie in the ligation and division at previously selected and marked points, under local

anaesthesia, of varicose veins in the leg. The patients were kept seven days in bed and discharged after being up and about for two days longer. Some of these patients I saw years later, and it seemed to me that the results of the operation compared favourably with those often seen after much more lengthy incisions, dissections, and excisions, under general anaesthesia. Eventually recalling that experience to mind, after too often noting an ungratifyingly high percentage of recanalization, and of perhaps new varicose veins, in previously " successfully " injected cases (I quickly add, injected by me), I practised injection-ligation under local anaesthesia on these recurrent cases. Encouraged by results, I have tried to select the cases likely to recur, and have performed injection-ligation on them at once. None of these cases have been put to bed at all, or suffered apparently more pain or inconvenience than those injected only. Results in eighteen months' observations have been satisfactory.

There is a ready and pretty control for the injection-ligation treatment. Many patients have varicose veins in both legs, and most of these sufferers will readily offer one leg as the worse. Selecting the patient's choice of the worse leg, treat the varicose veins in that leg by injection-ligation, and those in the other leg by injection alone, using the same drug for both legs. Not so very many cases will suffice to bring operator and patient into cordial agreement on the choice of treatment for large varicose veins. With diffidence, then, I offer my own clinical experience in support of Mr. Dickson Wright's valuable work and conclusions.—I am, etc.,

H. M. HANSCHELL,
Honorary Medical Superintendent,
Seamen's Hospital.

London, June 24th.

TREATMENT OF CHRONIC ULCERS OF THE LEG

SIR,—I have read with interest the correspondence on the above subject in the *Journal* of June 4th. I appreciate the remarks of Dr. D. Kyle, to whom, with twenty years' experience of the successful use of glycerin solutions in the treatment of septic wounds, my method of adding balsam of Peru to the glycerin, with a view to promoting granulations and epithelization, commends itself. His interesting physical experiments raise some very important points as to the mode of action of hypertonic solutions.

Dr. Silverman's letter in the same issue of the *Journal* calls for some comment. In the first instance, I should like to disclaim any intention of persuading people to discard any of the methods in use in favour of my method before it has undergone a proper trial by competent observers. These methods would, of course, include elastic compression with sclerosing injections of varices where concomitant—a measure, according to Dr. Silverman, which is widely practised with undoubted success. I should like, however, to point out that: (1) This method, far from being suitable for all varicose ulcers, is, according to Professor Sicard, McPheeters and Merkett, T. Higgins, and others, applicable only to a definite class of varicose ulcers of moderate size, without trophic changes (Thornhill advises the injection only of a " key " vein, where discoverable). (2) Even where the injection of veins is indicated and carried out, recanalization of injected veins is liable (as pointed out recently by Dickson Wright in the *Journal*) to occur, and in order to make the veins effective to these injections, ligation—a surgical procedure—should be added. (3) The possible risks and drawbacks of the vein-injection method (suppuration, necrosis, embolism, etc.) are well known and cannot be overlooked, especially in weak or old people. Sicard gives twelve contraindications to the injection method for varices. (4) One must admit that vein injection, as well as skin grafting, which in addition has been advocated, demand a certain skill, as well as judgement in the selection of suitable cases.

On the other hand, the method recommended by me has none of these important drawbacks and limitations. It is applicable in all kinds of non-specific chronic ulcers —varicose and others. It is perfectly safe, simple in application, does not require any special skill, entails no pain for the patient, and is inexpensive. As pointed out in my summary, even the most extensive ulcers of the leg may heal under ambulatory treatment by this method, and I was able at Bern clinics to convince myself and others of this in people of advanced age with callous ulcers of thirty to thirty-eight years' standing.

That such a method has great advantages compared with others is obvious, and it ought to find favour—especially where other established methods have failed, or are inapplicable. In conjunction with regulated pressure with bandages, it ought to be even more valuable. I hope shortly to publish *in extenso* a record of some of the cases treated by this method, as well as the bacteriological tests which have been embodied in the thesis for my degree. The method will, I hope, be duly tested and come up to expectations.—I am, etc.,

London, N.W.2. M. UMANSKI, M.D.

PREPARATION FOR MARRIAGE

SIR,—I believe Dr. Crookshank and I can join hands upon the fundamental therapeutic aim for which we are working, and to a large extent we are agreed upon the measures by which it can be achieved. Dr. Crookshank believes in the " propagation of healthy biological teachings," by which I take it he has in mind a purposive evolutionary philosophy based on biological findings. For the study of biology by itself is not enough, since, as we know, many people follow biology as a *métier* without any appreciable effect upon their fundamental psychic premisses. I pin my faith to adult education, by which I mean the building up of a general cultural response to the actual biological and psychological problems of the adult phase of life. This whole question of adult education concerns our profession most nearly, because, as Dr. Crookshank would be the first to acknowledge, the modern man and woman are turning to the doctor rather than to the priest for help in their life problems.

It seems to me to be idle to attack the Church, because if any of the various Christian orthodoxies could offer to modern man a more comprehensive and practical life-philosophy than science can give he would naturally and rightly turn to the priest with his problems. But the very remarkable interest in psychotherapy throughout Europe and America, and the more or less scientific psychotherapeutic improvisations of the last two decades, seem to point quite definitely to the conclusion that this very important cultural need, which in bygone days was met by the Church, is now tending to swing over to the side of medicine. The problem therefore would seem to be: How will medical science respond to this need? The authority which the Church held in handling these vital individual problems came from the general belief that the priest was in a specially privileged position to know what was the " will of God " in regard to the sexual function. This belief has either disappeared or has been so modified by the disintegrating analysis of the evolutionary standpoint, which necessarily has a vastly broader appeal to any man or woman who feels some responsibility about his own thinking, that it has scarcely any power in the conscious mental life of the modern man. But the effects of this belief still work potently in the unconscious or instinctual attitude.

The prevailing modern conception that sexuality is a purely personal or individual affair, just an appetite and nothing more, is of course a kind of pendulum reaction to the "will of God" hypothesis. But it is a noteworthy fact that men who hold this view, and believe that they conduct their emotional lives in accordance with it, actually in their behaviour, or in the resulting neurosis, offer abundant proof that this hypothesis in practice is no more feasible than the one which they think they have rejected.

In the last analysis every neurosis is a fuss, and if we believe that the mind is not just the end-product of a series of haphazard biological accidents we must assume that the fuss is about something; and the business of the physician to whom modern man turns with his problems is to discover what the fuss is about.

I would suggest that the reason people bring their deep problems to the doctor is not because knowledge of biology provides him with a higher authority than knowledge of the Bible, but because he is trained to explore and find out what is the matter by empirical means. This discipline rather than any superior knowledge is his authority, because it teaches him to observe and understand and listen to the individual case instead of providing a general doctrinaire diagnosis.—I am, etc.,

West Byfleet, June 19th. H. G. BAYNES.

AVERTIN AND THE DAMAGED LIVER

SIR,—Dr. Ashworth is among those in this country who have apparently, unlike myself, got very good results from the use of avertin, and judging from a previous series of his published cases he has had considerable experience of the drug. Why, then, does he publish three such unconvincing cases as those in his article on avertin in the presence of damaged liver function (June 18th)?

In the first case, a slightly jaundiced patient who "looked very ill" would not be likely to vomit more than slightly on the evening of operation after a well-administered anaesthetic of ether and oxygen. Nitrous oxide and oxygen cannot be blamed for the vomiting, as I assume there was no cyanosis, and therefore avertin in this case shows up no better than ether would have done. In the second case, avertin, nitrous oxide, ether, and chloroform are all used, and the case can prove nothing. The suggestion it offers, to my mind, is that had Dr. Ashworth not been embarrassed by the action of his avertin he could have pushed pure ether far enough to meet the surgeon's requirements, and would probably have saved his patient forty-eight hours' nausea, which probably was the only symptom of a toxaemia due to such a combination of drugs. The third case is much more convincing, but here again ether is used.

Although one might agree with his first conclusion, that avertin may not be definitely harmful in the presence of liver damage, I feel that he is not treating the evidence of his three cases justly in saying that they afford "strong presumptive evidence that avertin is less damaging to the liver than chloroform or ether."

Three cases are few enough to rely upon to compare two drugs, but where is the comparison when the drugs to be compared appear together in two cases?—I am, etc.,

Northampton, June 25th. F. F. WADDY.

RADIUM THERAPY AT ABERDEEN

SIR,—I was interested to read your laudatory review of the report of the Royal Commission of the Government of Ontario on the medical uses of radium and *x* rays. Whilst agreeing as to the promptitude with which the Commission has published its findings, I cannot praise the accuracy of the section concerning the work done at the Aberdeen National Radium Centre. I think that one or two of the statements are misleading, and were printed without due regard to circumstances. The visit occurred during the summer vacation of those senior members of the Natural Philosophy Department of the University of Aberdeen who are responsible for the radon plant; "Professor Catto of the Royal Infirmary" is unknown either here or in that department. Moreover, it is quite inaccurate to state that "apparently no research work is carried on." Cases of carcinoma of the cervix are not given deep *x* rays before operation, but as a sequel to radium treatment. I certainly do not prefer radium to *x* rays in cancer cases—a sweeping statement—but consider that a judicious combination of treatments suitable to the individual requirements of a case of malignant disease yields more satisfactory results than any one method alone.

I object also to the bare statement that "apparently there are no statistics of the work carried on." It is true that in July, 1931, the Centre had not actually compiled its first annual statistical report to the National Radium Commission, but the material was available, and Aberdeen has been in possession of Medical Research Council radium since 1922, and statistics of the work of my predecessors are available in the published annual reports on medical uses of radium (Medical Research Council).

To my mind, the word "*apparently*," used twice in connexion with the statements to which I object, implies assumptions on the part of the one member of the Commission whom I saw for a few minutes: such unqualified assumptions are, in my opinion, not quite fair.—I am, etc.,

W. G. EVANS,

June 22nd. Radium Officer, Aberdeen Royal Infirmary.

Obituary

SIR ROBERT FOX-SYMONS, K.B.E., M.R.C.S., L.R.C.P., D.P.H.

We regret to announce the sudden death on June 26th, in a London nursing home, of Sir Robert Fox-Symons, who had for many years been a highly successful general practitioner in Kensington.

He was born in Brazil of Cornish parents on October 8th, 1870, and entered St. Thomas's Hospital as a medical student at the age of 18, qualifying as M.R.C.S. and L.R.C.P. in 1894. Some years later he obtained the D.P.H. of the Irish Royal Colleges. After holding the post of house-surgeon at St. Thomas's, he served during the Graeco-Turkish war as a surgeon with the Red Cross. Two years later he saw active service again as a civilian surgeon in the South African war. In 1901 he was appointed medical officer of health for Pretoria, and in 1903 acting medical officer of health for the Transvaal, with a seat on the Legislative Council during its first session. Soon afterwards he was appointed medical adviser to the High Commissioner for the Union of South Africa, and Inspector-General of Hospitals for the Transvaal. In the autumn of 1914 Fox-Symons was placed in charge of the Auxiliary Home Hospital Department of the British Red Cross Society, and in that capacity did excellent work, for which he received the honour of K.B.E. in 1918. He was a Justice of the Peace for the Transvaal, a Chevalier de l'ordre Roy. du Sauveur, and a Knight of Grace of the Order of St. John of Jerusalem in England, in which Lady Fox-Symons, R.R.C., is a Dame of Grace. His early work with *x* rays in military surgery during the Graeco-Turkish war was recorded in a paper written jointly with Mr. F. C. Abbott, F.R.C.S., now of Bletchingley, who was chief medical officer to the National Fund for Greek Wounded in 1897.

Fox-Symons was a most genial and kindly man who took a warm personal interest in all his patients. He

was devoted to sailing off the Cornish coast, and had been a good billiards player. He was for many years a familiar figure on Saturday afternoons at the Savile Club and in the pavilion at the Oval. A devoted son of St. Thomas's Hospital, he looked forward with keen pleasure to the dinner meetings of the select circle of old Guy's and St. Thomas's men who form the United Hospitals Club. In 1904–5 he served on the Colonial Committee appointed by the Council of the British Medical Association.

Dr. E. CHITTENDEN BRIDGES writes: As one of the late Sir Robert Fox-Symons's oldest friends, dating back some forty years or more, I cannot refrain from adding my tribute to his memory. "Foxy," as he was affectionately known to his old and most intimate friends, possessed one of those kind, sympathetic, and lovable natures which endear a man to all. He was always ready to come to one's aid, whether it was professional or otherwise, and I have more than once received great kindness from him. Being a good musician, he was much sought after as a young man; he was the life and soul of many a musical party given in the wards of the London hospitals. For some years he had been handicapped in his work as a general practitioner, suffering from double thrombosis of the lower extremities, following an attack of typhoid fever during the South African war, and from which he never recovered. One cannot do otherwise than look upon his comparatively early death as the result of war service. He fought a brave fight against ill-health these last few years which few of us could equal, and always had a cheery smile for those he came in contact with. Sir Robert Fox-Symons will be greatly missed by a large circle of friends, and by his many patients who were much attached to him.

Medical Notes in Parliament

[FROM OUR PARLIAMENTARY CORRESPONDENT]

In the House of Lords, on June 23rd, the Earl of Lucan presented a Bill to include offences in relation to dangerous drugs, and attempts to commit such offences, among extradition crimes. The Bill was read a first time.

The House of Commons this week debated Indian affairs. A statement on the future Government of India was made by the Secretary of State. Discussion also arose on disarmament. Scottish Estimates were discussed by the House in committee. The Colonial Office Estimate was also set down for debate. In the House of Lords several Bills made progress, including the Town and Country Planning Bill.

In the House of Lords, on June 27th, the Earl of Lucan moved the second reading of the Extradition Bill, the primary object of which, he said, was to enable the British Government to ratify a new extradition treaty concluded with the United States of America. This Bill was to deal with offences in relation to the importation of dangerous drugs. The Bill proposed that: "The Extradition Act, 1870, shall be construed as if offences against any enactment for the time being in force relating to dangerous drugs, and attempts to commit such offences, were included in the list of crimes in the First Schedule to that Act." The Bill, which was practically a one-clause measure, was read a second time.

Patents and Designs Bill

The Patents and Designs Bill was reported, as amended, and was read a third time by the House of Commons on June 24th. During the report stage the House agreed to Clause 8 (subject matter of patents for chemical products and substances intended for food or medicine) as this clause had been amended in Standing Committee. The clause as it now reads makes amendments to the relevant clause in the principal Act, which now will run: "In the case of inventions relating to substances intended for food or medicine, a specification shall not include claims for the substance itself except when prepared or produced by the methods of manufacture particularly described and ascertained." The amendment also adds the words: "Provided that in relation to a substance intended for food or medicine a mere admixture resulting only in the aggregation of the known properties of the ingredients of that substance shall not be deemed to be a particular method or process of manufacture."

Health Insurance Bill

The National Health Insurance and Contributory Pensions Bill was read a third time on June 21st. During the report stage of the same Bill, earlier in that sitting, which was briefly recorded in the *British Medical Journal* last week, debate arose on the illnesses of married women and on allegations of lax certification by panel practitioners.

Mr. RHYS DAVIES moved to leave out Clause 3 (rates of sickness and disablement benefits). He said one of the primary causes for the actuary's report and the introduction of this clause was the loose certification by some of the medical profession. During the last few years the approved societies had had to carry a new charge—the whole of the medical benefits. The Ministry appointed about 200 regional medical officers to check the work of the panel doctors, and the cost of those regional medical officers had fallen on the funds of the approved societies. In addition, there was a new staff of regional dental officers, which checked dental claims. The Ministry had not been satisfied either with the medical or the dental practitioners under this scheme. Unless there was a new conception of their duty among the profession towards this scheme, nothing, not even a reduction of benefit, could save the scheme.

Mr. BUCHANAN said that the circular issued by the Minister of Health of the Labour Government in 1930 was a deliberate act to hound the doctors to be less humane to poor people. If the Labour Party were proud of the desire of its Front Bench for inhuman treatment by doctors, he was glad his association with them was severed.

Dr. O'DONOVAN said that Mr. Rhys Davies seemed to have some obsessional complex in regard to the panel doctors. If there was such a thing as loose certification he (Dr. O'Donovan) did not think that it would ever be corrected by loose speaking that covered looser thinking. Good certification would never be obtained from doctors who were under the lash of actuaries. If the speech of Mr. Davies displayed the spirit by which the approved societies were guided, then the greater distance the doctors kept from those societies the better for the sick and the better for the doctors. The certification of married women was certainly difficult. A married woman bringing up a family was subject for years to a greater stress than any industrial hazard known to man. Doctors knew that and married men knew that, but it was strange that in the board room of an approved society these human and medical facts were soon forgotten. Loose certification had never yet been proved. He had seldom heard charges made in such ungracious language as those of Mr. Rhys Davies. The regional medical officers did not exist to check the work of their colleagues; they were brother practitioners, ready to help the juniors in their difficult work and to promote cordial interaction between all the forces of public medicine. He himself was responsible for a large department dealing with that disfiguring and destructive disease known as lupus. The approved societies, represented as the last word in benevolence, were continually seeking to have the allowance paid to the sick cut off under the impression that those who were losing their noses, ears, and whole portions of their faces were fit for work because their biceps were still sound. Regional medical officers were of the greatest assistance to him. When complaints were made that patients were away from work too long, these officers, who had been represented to the House as an expensive check on bad work, were of the greatest service in putting his opinions about his patients to the approved societies, whereupon complaints were withdrawn and sick pay was continued. Regional medical officers were experienced doctors who had had from five to fifteen years in general practice, and they would resent from their hearts the suggestion that they existed as policemen or as detectives or guardians of the public purse. The medical profession had existed for two thousand years

as a coherent and traditional body, and it was an explosive thought that a new conception of medicine should come in. Their sole object was to help the sick and to keep the sound alive. He hoped that they had heard the last of these loose attacks on the panel doctor's job. Panel doctors whom he knew—and he knew them by hundreds—were as honourable in their intentions and as upright in their certification as any politician was in the conduct of public business.

The amendment was rejected.

Insured Married Women

On a proposed new clause for the classification of insured married women, Sir FRANCIS FREMANTLE seconded the motion. He said that the House was asked to choose between a proposal which might involve a certain number of hard cases and the Bill as it stood, which, in the opinion of those qualified to judge, would still leave the insurance system as a contributory system not yet safe and sound. The proposed new clause was that every woman on marriage had to go into Class K, and within twenty-six weeks she would again, with proper contributions if she was employed, be entitled to full benefits. During those twenty-six weeks she was limited to six weeks of benefit. They recognized that if she suddenly became sick and wanted to claim more than six weeks' benefit that was a hard case, but what was the extent of the hardship? Presumably on marriage she was fit; it was unlikely that she would marry if she was immediately going to claim sickness benefit. The average claim of women would be only one week's benefit even at the present rate of benefit. Yet this new clause provided for six weeks' benefit. It would seem, therefore, that the six weeks would really cover practically all cases within the first six months after marriage. He did not see any prospect of real hardship to married women. Figures which had been put before the House by those who had to carry out the Act—the figures were innumerable, and could be seen in the actuary's report—clearly showed that there was an increase in the married women's claims. He wanted to disabuse the House and the country of the idea that these were cases of malingering. When people were hard up they would naturally take advantage of benefits provided by the State under law. There was no question of wishing to cheat about it. If it was clearly recognized that they were entitled under any law to a benefit they would claim it. That was not limited to married women in approved societies; it would be the same with nearly every member of the House. The House, having at last made up its mind that it was going to make this insurance fund self-supporting, was bound to take the view of the great mass of officials and societies who were in favour of the new clause.

The proposed new clause was rejected, the Minister of Health being unable to accept it.

On the motion for the third reading of the Bill, Mr. HOWARD said that he defied any Labour member who represented, as he did, a working-class constituency, to say that there was no malingering by married women, or that doctors did not give certificates unless they were fully assured that there was real sickness. He was talking the other day to some working men in a workshop, and a trade unionist said to him: "I know old Dr. So-and-So gives away certificates to the women as they walk in without inquiring at all. All they have got to do is to ask for a certificate, and they get it."

Mr. LOGAN: Would the hon. member dare mention that outside this House in respect of any doctor?

Mr. BUCHANAN: Why not mention that doctor outside, where it could be challenged?

Mr. HOWARD said he was speaking from personal knowledge. Every Labour member was as conversant as he was with these facts. Doctors to-day who had 1,100 patients or insured persons on their panels had a guaranteed income, and by the method which Parliament had adopted, which allowed a panel patient to transfer himself from one doctor to another, they had placed a temptation in the way of the doctor which forced him, in order to retain his panel patients, to be as lenient as possible.

Mr. BUCHANAN said that in these difficult times the doctors carried out their public duty in a very fair manner, and many poor people counted them among their best friends. He resented the suggestions made against the doctors. The position in regard to the ordinary doctors in the poorer districts was that they were carrying out public duties in a public-spirited manner, and their generosity towards the poor very often amazed him. If charges were made against doctors they should be made in a proper fashion. The doctors should be given an opportunity of meeting the charges, and they would be glad to produce evidence to do so.

Sir HILTON YOUNG said that it was unprofitable in that House to indulge in heated debates whether or not there was a large extent of malingering among insured persons, or whether or not insurance doctors were doing their duty by the scheme. On neither of those matters would he advance any charges or any criticism. He believed that the growth of sickness experience was the result of forces which were practically irresistible—the social forces of bad times. As regarded the medical profession, if there was an improvement to be made in administration it was not in the direction of correcting faults either of honesty or of efficiency among the medical profession—he did not believe that there were such—but it was a recognition of more exact and higher standards of administration, which were more in accordance with the needs of the times.

The Bill was read a third time.

Scottish Health Estimates

On June 22nd Mr. SKELTON opened a discussion on the Estimates of the Scottish Department of Health. He said that in a time of economic difficulty the health of Scotland in 1931 showed a definite though small improvement. The infant mortality was 82 per 1,000 births instead of 83, and maternal mortality was reduced from 6.9 per 1,000 births to 5.9. The death rate from tuberculosis fell from 88 to 87 per 100,000 of population. The system of public health, superimposed on immense private effort, was able to hold its own.

Mr. MACPHERSON noted that the allocation for the Highlands and Islands Medical Service Fund had been reduced this year from £70,000 to £66,000. He feared that was a false economy, and urged the Department of Health to reconsider the housing of Highland doctors and ensure that they had the advantage of surgeries. The Department had dealt with the provision of telephones in doctors' and nurses' houses, but had not dealt with it sufficiently well.

Mr. MCGOVERN averred that in Glasgow there was a conspiracy between the health department and the housing department. Houses which should be condemned were not condemned because the housing department refused to supply housing accommodation for the displaced tenants.

Mr. LEONARD pointed out that 34 per cent. of the cases of infectious diseases in Glasgow had to be removed to hospital. In Birmingham the proportion was 17 per cent. That difference was due to housing conditions. In Glasgow, during 1930, 94 per cent. of the cases of scarlet fever had to be removed to hospital; erysipelas 51 per cent.; and pneumonia 51 per cent.

Mr. MACQUISTEN suggested that in the Highlands the offices and incomes of parish minister and medical officer should be combined under a medical missionary system, and the clergyman's house used for a doctor's house, with a surgery.

Mr. W. R. SMITH remarked that despite the need for economy, the salaries, wages, and allowances of part-time medical and dental staff in Scotland had risen from £3,000 to £4,150. He pointed out that deaths from puerperal sepsis had not dropped concurrently with the fall in the general rate of maternal mortality. There were 2,157 cases of puerperal sepsis in 1931, against 2,000 in 1930. He suggested that the Department should analyse the returns to show whether the deaths were in cases in institutions or in respect of cases attended by a doctor or by a midwife.

Colonel MACANDREW referred to dangers from insanitary conditions in summer camps in the West of Scotland. He hoped the Minister would give his attention to this matter. Powers were provided under the Public Health (Scotland) Act, 1897, and owners who let land for camps could be forced to make both water and sanitary arrangements.

Replying to the debate, Mr. SKELTON said the economy effected in actual cutting down of the Highlands and Islands Medical Fund grant was only £500. He had under consideration the provision of telephones and the housing of medical officers and surgeons in the Highlands. He promised to look into the question of puerperal sepsis.

The Estimate was carried.

Medico-Legal

DOGS IN MOTOR CARS

An important decision was reached by the Court of Appeal, consisting of Lords Justices Scrutton, Lawrence, and Greer, on June 22nd, which virtually means that motorists can keep dogs, not known to be of a dangerous nature, in their cars without incurring liability should the animal injure a person who may trespass upon or tamper with the vehicle. The appeal, which was from a decision by Mr. Justice du Parcq, was brought by Dr. Bernard Ley of Ashburn Place, S.W. The parents of a child claimed damages from Dr. Ley because of injuries sustained by her through being bitten by his Sealyham terrier, which had been left tied inside his car in such a way that its muzzle could only protrude three inches beyond the car door. The child, although she in common with other children around had been warned by Dr. Ley, leaned over the car to look at the dog inside, and was bitten. The jury which sat with Mr. Justice du Parcq was unable to agree as to whether the dog was of a ferocious disposition, whether its owner was negligent in leaving the dog tied up in the car, and whether his negligence was the cause of the girl's injuries, but answered "No" to the question whether the girl was guilty of contributory negligence. No verdict was recorded, and the judge declined the defendant's application for judgement.

In the Court of Appeal Dr. Ley's appeal against this refusal to enter judgement for the defendant was allowed, and judgement was entered for Dr. Ley. Lord Justice Scrutton said that there was no evidence that the dog in this case was of a vicious character. He understood that the Automobile Association attached great importance to the case as raising the question whether owners might leave a dog known to be dangerous in a motor car to protect it, but the Lord Justice would not lay down any such proposition; a better case must be obtained before that point could be decided. Dogs generally, he said, were not in a class of vicious animals, and therefore the owner of a dog was not responsible unless the animal was known to have acquired vicious habits of which its owner was aware. The other Lords Justices concurred, Lord Justice Greer remarking that the doctor was entitled to leave the dog in his motor car for the reasonable protection of the car when he had to be absent, provided he took reasonable steps to protect those who were entitled to use the public highway. In this case the defendant had not only fastened the dog in the car, but had also warned the children to keep away.

Universities and Colleges

UNIVERSITY OF OXFORD

At a congregation held on June 23rd the following medical degrees were conferred:

D.M.—C. L. Elgood.
B.M.—J. M. L. Burtenshaw.

UNIVERSITY OF CAMBRIDGE

At a congregation held on June 21st the following medical degrees were conferred:

M.B., B.CHIR.—E. A. Nicoll, C. H. Wrigley.
M.B.—M. S. Montague Fordham.
B.CHIR.—H. F. Green, Manekji Hormasji Masina.

The following candidates have been approved at the examinations indicated:

THIRD M.B.—(*Part I, Surgery, Midwifery, and Gynaecology*): A. D. Aveling, S. E. Birdsall, C. P. F. Boulden, A. Bowen-Davies, E. J. M. Bowlby, H. W. L. Broadbent, C. C. Bryson, J. Cann, C. M. Carr, C. A. Clarke, J. W. Cope, W. D. Dick, W. Dykes Bower, R. H. Foster, K. H. Gaskell, D. W. C. Gawne, W. G. Gill, J. N. Groves, J. B. Harman, J. L. Jekyll, H. B. D. Kettlewell, N. Langdon-Down, A. B. MacEwan, M. H. Masina, G. A. Miller, T. D. F. Money, C. C. Morgans, B. C. Murless, R. W. Nevin, G. F. O'Connor, R. Q. Parkes, E. B. Pawson, R. V. Payne, R. G. Pulvertaft, J. P. Reidy, A. C. Rumsey, F. W. Shepherd, S. M. Silverstone, P. M. Smyth, G. V. Steward, S. K. K. Sze, G. W. Thomas, H. R. Thompson, T. M. Tyrrell, J. M. Vaisey, J. G. Warren, G. A. W. Whitfield. *Women:* P. M. Dobbs, J. C. Drury. (*Part II, Principles and Practice of Physic, Pathology, and Pharmacology*): A. R. Adderley, F. K. Boston, J. W. Bromley, D. B. Cater, H. M. Chappel, J. W. Cope, G. W. Crimmin, A. M. Cunningham, E. J. Currant, T. D. Day, K. V. Earle, W. O. M. Ede, C. D. Evans, J. H. Fisher, W. H. Gabb, T. C. Gipson, C. S. Hall-Smith, J. B. Harman, A. S. Herington, E. Hinden, B. Holden, P. W. Hutton, S. S. Jaikaran, N. D. Jekyll, W. H. G. Jessop, R. A. Jones, B. F. Longbotham, A. N. McCrea, A. B. MacEwan, G. C. Martin, G. J. Meikle, R. V. F. Mercer, J. Metcalf, W. H. Mylechreest, R. W. Nevin, S. H. B. Platts, F. Radcliffe, R. A. Ratcliff, I. C. Robertson, M. L. Rosenheim, B. Rothery, J. L. S. Scott, S. M. Silverstone, P. M. Smyth, G. V. Steward, H. R. Thompson, G. M. Tickler, O. S. Tubbs, J. T. Turner, J. M. Vaisey, J. L. Wild, G. Williams, C. E. R. Wood, A. H. Zair. *Women:* E. G. Byrde, A. M. Naish, A. C. Taylor.

UNIVERSITY OF LONDON

Mr. J. L. S. Hatton, Principal of East London College, has been elected Vice-Chancellor for 1932–3 in succession to Dr. J. Scott Lidgett, whose term of office expires on August 31st; Dr. W. R. Halliday, Principal of King's College, is appointed Deputy Vice-Chancellor vice Canon Douglas.

Dr. D. T. Harris, Assistant Professor in the Institute of Physiology, University College, has been appointed to the chair of physiology at the London Hospital Medical College.

The title of University Reader has been conferred on Dr. Evelyn E. Hewer, lecturer in histology at the London (Royal Free Hospital) School of Medicine for Women.

At a meeting of the Senate, on June 22nd, Sir Ernest Graham-Little, M.P., was reappointed as representative of the Senate on the Court of the University of London for a period of five years from October 1st next.

A university post-graduate travelling studentship of the value of £275 for one year has been awarded to Miss Muriel Hilary Eileen Long, B.Sc., M.B., B.S. (King's College Hospital), who will study surgery and its practice in Vienna, Cologne, Berlin, and Budapest.

UNIVERSITY OF SHEFFIELD

A. H. Briggs has passed the Final M.B., Ch.B. examination with second-class honours and distinction in obstetrics and gynaecology. He has also been awarded the clinical gold medal and the A. H. Holroyd gold medal for anaesthetics.

UNIVERSITY COLLEGE, DUBLIN

The following candidates have been approved at the examinations indicated:

M.D.—J. Duffy, E. J. T. McWeeney, T. O'Carroll, J. M. O'Connor, G. E. O'Riordan.
M.CH.—C. J. Shorthall.
M.A.O.—Margaret M. Nolan.
M.B., B.CH., B.A.O.—*J. F. Sheehan, *T. A. Brady, Mary Byrne, W. Canning, F. J. Clancy, W. C. Clyne, T. Crowley, J. F. Eustace, J. V. Glass, J. M. Kerr, P. J. O'Doherty, Mary E. Rudden. *Exempted from further examination in Part I (Medicine and Pathology)*: J. J. Kennedy. *Exempted from further examination in Part II (Surgery, Ophthalmology, and Midwifery)*: Irene A. Coster, J. Diver, P. (Ua Fearghail, Pol) Farrell, Colm McDonnell. *Exempted from further examination in Pathology*: Colm McDonnell, T. P. Powell.
DIPLOMA IN PUBLIC HEALTH (*Part I*).—Mary Courtney, Maureen V. Magee, Johanna O'Shea. (*Part II*) †John J. Keane, *J. I. Heany, *Patricia M. J. Daly, *F. N. Elcock, *M. C. Purcell, *E. F. Drum, *M. F. Daly, P. J. Aird, T. Langan.

† First-class honours. * Second-class honours.

The Services

HONORARY PHYSICIAN TO THE KING

His Majesty has approved the appointment of Major-General P. H. Henderson, D.S.O., M.B., late R.A.M.C., as Honorary Physician to the King, in succession to Colonel W. R. P. Goodwin, D.S.O., late R.A.M.C., who has retired.

COMMISSIONS IN THE R.A.M.C.

The War Office announces that twenty-five permanent commissions in the Royal Army Medical Corps are being offered to qualified medical practitioners, under 28 years of age, registered under the Medical Acts. There will be no entrance examination, but candidates will be required to present themselves in London for interview and medical examination on July 26th. Applications should reach the War Office not later than July 18th. All information as to conditions of service and emoluments may be obtained from the Assistant Director-General, Army Medical Services, the War Office, Whitehall, S.W.1.

Medical News

The fiftieth anniversary annual dinner of the West London Medico-Chirurgical Society will be held at the Hotel Rembrandt, Brompton Road, on Friday, July 8th.

The annual general meeting of the Royal Society of Medicine will be held at 1, Wimpole Street, W.1, on Tuesday, July 5th, at 5 p.m., when the officers and council for the session 1932–3 will be elected and the annual report of council submitted for approval.

The organizing secretary of the Papworth Village Settlement for the Tuberculous announces that the Duke and Duchess of York will pay a third visit to Papworth (near Cambridge) on July 8th. Her Royal Highness will inaugurate a new hospital for women at midday, and declare open the West Cambridgeshire Flower Show at 12.30 p.m. A French Picture Matinée will be held on July 5th, at His Majesty's Theatre, in aid of Papworth Hospital and Settlement and the Princess Beatrice Hospital ; a special appeal will be made on behalf of the latter institution.

On July 4th Dr. Helen Keller, the American deaf-blind author, will open the new school for blind masseurs at the London headquarters of the National Institute for the Blind in Great Portland Street. The original school was housed in the building which the King opened in 1914, but owing to expansion since that time special accommodation has had to be built. After the opening ceremony Dr. Keller will be the guest of honour at a luncheon attended by medical men, representatives of various sports, and others interested in the modern application of massage treatment. The organizations to be represented at the luncheon include the Ministry of Health, the Board of Education, St. Dunstan's, the British Red Cross Society, the British Medical Association, the Society of Apothecaries, the Chartered Society of Massage and Medical Gymnastics, and the Association of Certificated Blind Masseurs. During the afternoon Dr. Keller will hold a reception in the Armitage Hall.

A course of eight lectures on some problems of childhood, arranged by the National Institute of Child Psychology, is being held at Friends House, Euston Road, N.W., on Mondays, at 6.15 and 8.15 p.m.

The Fellowship of Medicine announces two demonstrations in medical ophthalmology at the Royal Westminster Ophthalmic Hospital on July 6th at 5 p.m. ; these are especially suitable for M.R.C.P. candidates, but are open to all practitioners who are members of the Fellowship of Medicine. A course in proctology will take place at St. Mark's Hospital from July 4th to 9th. Lieut.-Col. R. H. Elliot will give three lectures for general practitioners, on " Migraine," on July 14th, 21st, and 28th at 5 p.m., at the Medical Society of London, 11, Chandos Street. The first of a series of discussion-demonstrations for general practitioners (free to members of the Fellowship) will take place at the National Temperance Hospital, on July 22nd at 8.30 p.m. The subject of the first will be " Certain aspects of indigestion."

The Health Exhibition in connexion with the forty-third Congress of the Royal Sanitary Institute at Brighton is to be formally opened by the Mayor of Brighton on Monday, July 11th.

The National Conference on Maternity and Child Welfare, on July 4th, 5th, and 6th, will be held in King George's Hall (Y.M.C.A.), Caroline Street, Great Russell Street, W.C., instead of at the Guildhall.

The thirty-sixth congress of French-speaking alienists and neurologists will be held at Limoges under the presidency of Professor Euzière, dean of the Montpellier Faculty of Medicine, from July 25th to 30th, when the following subjects will be discussed: constitutions in psychopathology, introduced by Dr. Achille Delmas of Ivry-sur-Seine ; leuco-encephalitis and other diffuse affections of the white substance of the brain, introduced by Dr. Moreau of Liége ; and the protection of the property of psychopaths, introduced by Dr. Lauzier of Clermont de l'Oise. Further information can be obtain d from the annual secretary, Dr. Calmettes, Asile de Naugeat, Haute Vienne.

The first Colyer prize, founded by the Royal Society of Medicine in 1926 to commemorate the twenty-five years' service of Sir Frank Colyer as honorary curator of the Odontological Museum, has been awarded by the Council of the Society to Mr. Martin A. Rushton, B.Ch., L.D.S., for his work on " matters regarding dental science during the past four years." Mrs. Lilian Lindsay, L.D.S., has been appointed to the lectureship on the history of dentistry, founded in 1927 in memory of Mr. C. E. Wallis by his brother. The date of the Wallis Lecture will be announced later.

The Dr. Martini Foundation Prize of Hamburg, of the value of 1,200 marks, has been divided equally between Dr. Otto Fischer of Tübingen for his studies on the pathology and epidemiology of East Africa, and Dr. Helmut Schmidt of Hamburg for his work on narcosis and anaesthesia.

The issue of *Paris Médical* for June 4th, which is devoted to infectious diseases, contains a comprehensive survey by Charles Dopter, Inspector-General of the French Army, on recent work on enteric fever, undulant fever, typhus, measles, cerebro-spinal fever, poliomyelitis, epidemic encephalitis, post-vaccinal encephalitis, spirochaetosis, icterohaemorrhagica, amoebic dysentery, and Leishmaniasis.

The May-June issue of *Acta Rheumatologica* contains the programme of the third International Congress against Rheumatism, which will be held in Paris from October 13th to 15th under the presidency of Dr. R. Fortescue Fox.

The official organ of the Indian Medical Association, which was first published as the *Indian Medical World*, has since September last appeared as the *Journal of the Indian Medical Association*. The editor-in-chief is Sir Nilratan Sircar, M.D., and the secretary-in-charge Dr. Aghorenath Ghosh. The issue for March, 1932, was a special tuberculosis number.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are *MUSEUM* 9861, 9862, 9863, and 9864 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:
EDITOR OF THE *BRITISH MEDICAL JOURNAL, Aitiology Westcent, London.*
FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*
MEDICAL SECRETARY, *Mediseeva Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin* ; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh* ; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Oedema of the Feet

" E. S. W." writes: I should be pleased to know of any treatment that would help in a case of a woman, aged 42 years, who has had oedema of the feet and ankles for three years. Her general health is very good ; there is no evidence of anaemia, heart, kidney, or pelvic trouble. In fact, she only complains of the local condition. She has had courses of calcium injections with parathyroid, and local treatment with massage and iodine preparations. Bandaging only makes the swelling appear higher up the leg.

Cellulose Spraying

"C. T." writes: A patient of mine is by occupation a cellulose-sprayer. He tells me that "gas-masks" are provided, but he does not make use of his. I should be glad to know where I can get information as to what symptoms are likely to arise in persons engaged in this occupation who are insufficiently protected. Are there any Government regulations dealing with this subject?

Anaphylaxis and Bee-stings

"G. P." would be glad to know if there is any treatment a patient can administer to herself for bee-stings where general swelling and prostration follow in a few minutes. There is usually shivering followed by fainting.

Treatment of Bilateral Pyelitis

"A. B. C." writes: I should be grateful for advice as to treatment of chronic bilateral *B. coli* pyelitis of about four years' duration. Alkaline diuretics for prolonged periods, hexamine, dyestuffs, and autogenous *B. coli* vaccine have been tried. The patient is a married woman of 30 years of age, whose sole symptom is backache.

Removal of Tartar

"M. C. S." (Haverhill) writes: In answer to "S. Dorset" I have a patient who for a year has eaten four or five oranges a day. At the end of this time both she and her dentist noticed that there was an absence of the usual deposit of tartar, and, for the first time, her teeth were not scaled. There may be no connexion, but I send the observation for what it is worth.

Income Tax

Travelling Expenses—Loss as Consultant

"X. Y. Z." is a school medical officer and uses a car to visit various schools "in a district forty miles" from his residence; can he claim depreciation of the car? Also, in the event of his starting to practise as a consultant he anticipates that for some time the rent and other expenses will exceed any earnings; can he make any claim for such expenses?

*** With regard to the car, it is settled law that the expenses of travelling about on the duties of the appointment are admissible, but not the expense of travelling to the place where such duties are performed. Consequently "X. Y. Z." is not entitled to charge against his emoluments as M.O. the expense of going *to* the area where the schools are situated, but in our opinion such proportion of the expenses as is incurred in travelling *within* the area is admissible, including a reasonable proportion of the depreciation. Any consulting practice would be dealt with under Sch. D, and any excess of the expenses over the gross earnings would be a loss for which a set-off can be claimed under Section 34 of the Income Tax Act, 1918. This would apply as from the date when the plate was put up and "X. Y. Z." attended for consultation—if disputed our correspondent might quote the decision of the court in Kirk and Randall v. Dunn.

LETTERS, NOTES, ETC.

M. Andre Simon's Medical Books

The well-known French collector M. André Simon has entrusted Messrs. Sotheby of Bond Street with the disposal of a selection from his library of old medical and scientific books. The catalogue of the auction on July 5th contains many interesting and valuable varieties. Bartholomew Glanville is strongly represented: of his *De Proprietatibus Rerum* there are the original edition (Basle) of 1470, that of 1481 (Cologne), two of Lyons (1482 with seven unrecorded leaves, and 1491), Nuremburg editions of 1483, 1492, and 1519, Strasbourg 1485 and 1491, Heidelberg 1488, and a Dutch translation from Haarlem, 1485. John of Gaddesden's *Rosa anglica practica medicine a capite ad pedes*, published at Pavia in 1492, is the earliest production of an English author in the sale: others are James Hart's Κλινικη, *or the Diet of the Diseased*, 1633; W. Vaughan's *Directions for Health*, 1626, with appendices on ophthalmology; T. Venner's *Via Recta ad vitam longam*, 1628, with a *Treatise on the Baths of Bathe* annexed; W. Langham's *Garden of Health*, 1579; A. Borde's *Breviarie of Health*, 1587; T. Cogan's *Haven of Health*, two editions of 1589 and 1612 respectively; Sir Thomas Elyot's *Castel of Helth*, 1539; and Roger Bacon's *Cure of Old Age and Preservation of Youth* (translated by R. Brown), 1683. Among the foreign items, of which there are a very large number, Villanova is represented by issues of 1500 (*bis*), 1512, 1520, 1527 (*bis*), 1529, 1532, and 1618; Cardanus by books published in 1557, 1564, 1580 (*bis*), and 1584; Alexis of Piedmont by Latin books of 1559, 1560, 1563, 1568, French 1589, Italian 1568, and an English translation by William Wade of 1560. Marsilius Ficino is another of M. Simon's favourites; he is parting with editions of 1495, 1498 (three of these), 1501, 1518, 1532, 1541, 1576, and one or two later ones. Of the celebrated *Regimen Sanitatis* of the School of Salerno there are also several editions; those of Louvain 1480, Lyons 1501, Augsburg 1502, Strasbourg 1513, Valencia 1518, Cologne 1507, eight or nine slightly later French ones, and a few also of the seventeenth century. There are four sixteenth-century translations of Galen, others of Hippocrates, and treatises by Gesner, Lemnius, Valverdi, Avila, Hutten, Paulus Aeginetus, Magninus (1495 and 1503), Mendez, Gazius (1491 and 1514), and many other mediaeval medical writers.

Harvey Exhibits

Mr. FRANCIS J. COOPER (Librarian of the Folkestone Public Library) writes: A local history exhibition is being held in our Public Art Gallery during the four weeks commencing on July 12th. Prominent in the exhibition will be memorials of Folkestone's greatest son—Dr. William Harvey. The Royal College of Physicians, the Royal Society of Medicine, the Wellcome Historical Medical Museum, and certain private persons are contributing exhibits. We are making every endeavour to ensure a successful and important exhibition. If, through the medium of your paper, we can obtain the offer of further exhibits relating to Harvey, we should be greatly obliged.

Adequacy of Contraceptive Methods

Miss LILY C. BUTLER, M.R.C.S., L.R.C.P., writes: Dr. Vibert Pearce, in his letter to the *Journal* of June 25th (p. 1200), has raised an interesting question as to the length of time during which observation as to the adequacy of contraceptive methods should be observed. As medical officer at the Walworth Women's Centre, the parent clinic of the Society for the Provision of Birth Control Clinics, I am very interested in this question. Dr. Enid Charles, in her speech at the recent conference, made it clear that she considered the data she had analysed inadequate, but I think there has been a tendency in the past for observers to quote statistics before sufficient time has elapsed for these to be of actual value. We gave figures at the seventh International Birth Control Conference, held at Zürich in 1930, of cases under observation for a period of one to eight years, which we considered was a reasonable time. We had previously held that nothing under five years could be of scientific value. As the centre has now been opened for over ten years we think we may now justifiably give results on several thousand cases, and we hope to produce these at a later date.

Treatment of Pernicious Anaemia

Messrs. Evans Sons Lescher and Webb, Ltd., write: In your leading article of June 25th, relative to the treatment of pernicious anaemia, you refer to our preparation of liver, hepatex, for parenteral injection. In order that the preparation which we have introduced for parenteral injection under the name of hepatex P.A.F. may not be confused with our preparation for oral administration under the name of hepatex, may we ask you to draw attention in your columns to the preparations of liver which we are at present marketing—namely, (1) Hepatex P.A.F. for parenteral administration, which may be employed by the intravenous as well as by the intramuscular route. (2) Hepatex for oral administration. (3) Hepatex and iron for oral administration.

Locumtenents' Locomotion

"YORKS" writes: Until recently the custom has been to pay a locumtenent his travelling expenses, at least one way, and to find a conveyance for his use on professional rounds. At the present time the only allowance, in many cases, is one for petrol alone. A few incumbents have recently adopted the custom of granting an extra guinea a week where the locumtenent uses his own car. This is only fair, and ought to become general.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 38, 39, 40, 41, 42, 43, 45, and 46 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *11*.

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